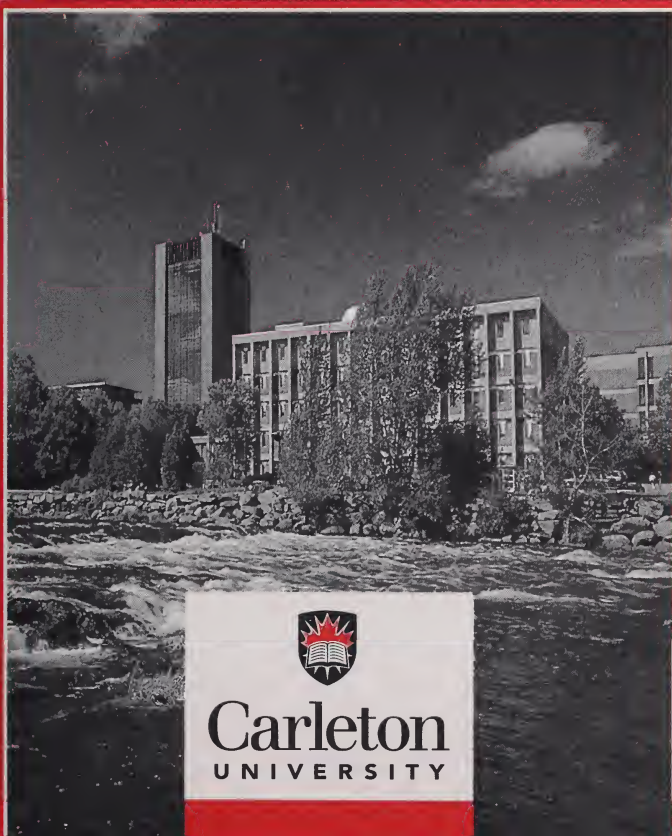


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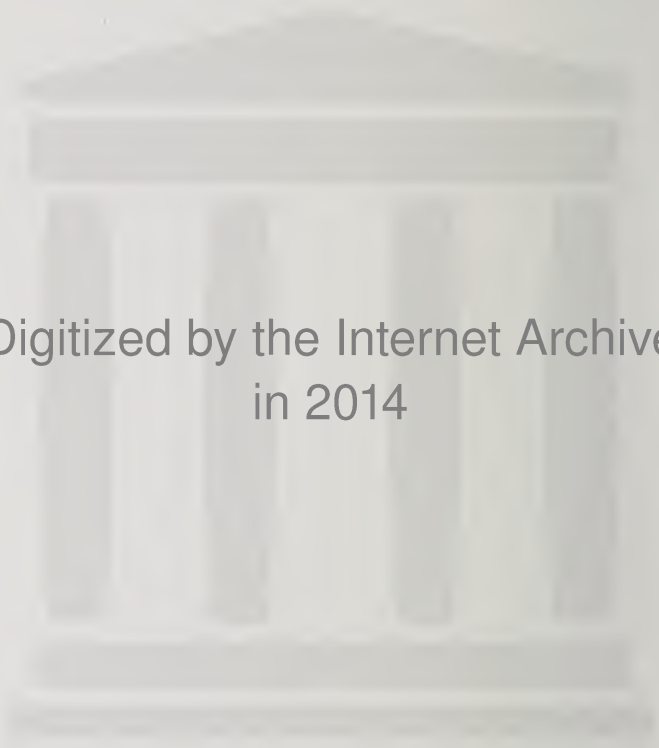
UNDERGRADUATE
CALENDAR

CARLETON

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Carleton University
1125 Colonel By Drive
Ottawa, Ontario, Canada K1S 5B6
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Fifty-Fifth Annual
Undergraduate Calendar
for the Academic Year 1996-97

This Calendar is published several months in advance of the beginning of the academic year. The University reserves the right to make whatever changes may be required, including alteration of the various fee schedules and cancellation of particular courses.

There are three sections provided to assist readers of the Calendar in finding information they need: this Table of Contents; the Glossary (see p. 8); and the Index (see p. 572).

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Carleton University is a community of faculty, staff and students who are engaged in teaching, learning and research. Its members are part of the community at large and are governed by the law common to all persons. But membership in the academic community also entails certain rights and responsibilities. The University respects the rights of speech, assembly and dissent; it prohibits discrimination on the basis of race, ancestry, place of origin, colour, ethnic origin, national origin, creed, sex, age, marital status, family status, political affiliation or belief, sexual orientation, or any handicap that is defined as such in the Human Rights Code of Ontario; it requires tolerance and respect for the rights of others; and it promotes an environment conducive to personal and intellectual growth.

(Please refer to Offences of Conduct, p. 53.)

Educational Equity Policy

Preamble

In support of Carleton University's commitment to Section 15 of the Federal Charter of Rights and Freedoms, Sections 4 and 13 of the Ontario Human Rights Code, and the University's mission statement,

Statement of Principles

Carleton University is committed to providing equity in its educational programs and services and a welcoming environment for all individuals regardless of race, creed, colour, age, sex, sexual orientation, marital status, family status, ancestry, ethnic origin, place of origin, or disability, as defined in the Ontario Human Rights Code.

Carleton University strives for the best possible educational experience for all of its students. The University attempts, to the best of its ability, to encourage and assist all students to succeed academically and as members of the University community.

Educational Equity Policy Statement

In support of its commitment to excellence in teaching, scholarship and research Carleton University seeks to identify University policies, programs, and services that need to be changed, enhanced or created, subject to the availability of resources, in order to:

- a) increase the access, retention and graduation of groups of students who have traditionally been under-represented, under-served, and/or disadvantaged in University programs, and
- b) provide a supportive and welcoming learning environment for all students.

The designated groups for educational equity include, but are not limited to: women; Aboriginal peoples; persons with disabilities; racial, ethnic or visible minorities; the economically disadvantaged; mature and part-time students; gay men, lesbians and bisexuals; and international students.

The University undertakes to provide reasonable accommodation to these groups and, to the extent that it is possible, to implement special measures to support the achievement of the University's educational equity goals.

In support of its commitment to achieve and maintain a hospitable campus climate for all students, faculty, and staff the University undertakes to provide education and training on human rights issues as these relate, *inter alia*, to curriculum and pedagogy.



Electronic Access to the Undergraduate Calendar

Electronic versions of the Undergraduate Calendar can now be accessed on the Internet. The electronic version is usually available within two months after the print version (i.e. by June 1). Every effort has been made to ensure the accuracy of these electronic versions, but in the case of any discrepancy, the printed Calendar shall be considered to be the University's official statement.

The electronic versions can be accessed by all users at gopher.carleton.ca and at <http://www.carleton.ca>. For those with campus CHAT accounts, these electronic versions are also available under the Carleton Information option.

Accreditation of the University

6

Carleton University, a founding member of the Council of Ontario Universities, enjoys full accreditation by the Ministry of Education and Training of the Province of Ontario.

The University is a charter member of the Association of Universities and Colleges of Canada. It is a member of the Association of Commonwealth Universities and participates fully in the Commonwealth Scholarship and Fellowship Plan. It is also a member of the International Association of Universities.

The baccalaureate degree programs in Aerospace, Computer Systems, Civil, Electrical and Mechanical Engineering are accredited by the Canadian Engineering Accreditation Board of the Canadian Council of Professional Engineers.

The degree offered by the School of Architecture is recognized by the Canadian Architectural Certification Board as a prerequisite to apply for certification of academic qualifications for registration to practise as an architect in a provincial association.

The Bachelor of Computer Science Honours Degree Program is accredited by the Accreditation Council of the Canadian Information Processing Society and the Computer Science Association.

The School of Industrial Design was established at Carleton on the recommendation of a study prepared by the Association of Canadian Industrial Designers. Initial funding for the school was supplied by Design Canada, Ministry of Industry, Trade and Commerce.

Carleton University participates in the Ontario Student Assistance Program, other provincial assistance programs and the Canada Student Loans Program and is fully recognized as one of the few participating institutions outside the province of Quebec for bursary assistance through the Quebec Loans and Bursaries Program.

Carleton University's degree programs are recognized in the United States by the Federal Guaranteed Student Loans Program and for student aid to veterans through the Veterans Administration.

In 54 years, Carleton University has grown from a small evening college in downtown Ottawa to an internationally recognized university on a modern campus. Full-time programs were first offered in 1946 in journalism and public administration. In 1957, as a result of an Act of the Ontario Legislature, Carleton College became Carleton University in name as well as in status. Rapid expansion during the following years led to the development of its present-day campus on a large, picturesque site between the Rideau River and the historic Rideau Canal.

The University's location in Canada's capital has shaped its philosophy and character in a special way. Throughout its history, Carleton has explored the Canadian perspective in many fields and utilized Ottawa's unique resources to give its students an advantage that few other universities enjoy.

Undergraduate and graduate programs are offered in the Faculties of Arts, Social Sciences, Engineering, Science, and Graduate Studies and Research and through many professional schools and institutes. Specialized research is carried out in more than 75 research centres. Undergraduate degrees in architecture, arts, commerce, computer science, engineering, humanities, industrial design, international business, journalism, music, public administration, science, and social work, include programs in more than 50 different areas of study. The Faculty of Graduate Studies and Research offers master's degree programs in arts, social sciences, computer science, engineering, journalism, management studies, science, and social work, and doctoral degrees in arts, social sciences, engineering, and science. Graduate studies in science and engineering are enhanced by linking resources and expertise through joint programs with the University of Ottawa. Undergraduate and graduate diplomas and specialized certificates are offered and courses in English as a Second Language and a variety of other language training services are also available. The academic reputation that Carleton has established in these areas is complemented by innovative interdisciplinary programs that provide students the opportunity to study subjects such as environmental studies, Canadian studies, communications, studies in art and culture, criminology and criminal justice, and women's studies.

Today, with approximately 22,000 full-time and part-time students from the national capital region, from across Canada, and from more than 90 other countries, Carleton University has acquired a reputation that is worldwide. Since its creation in 1942, Carleton University has had a strong involvement in international activities. Today the University has over 50 active academic exchange agreements with institutions and governments around the world.

Carleton University is committed to equity in education by making programs and resources widely available to a diverse clientele.

The University's School of Continuing Education serves the community throughout Ottawa, eastern Ontario and western Quebec regions with a wide variety of credit programming. Instructional television programs (Itv) on cable television and course lecture tapes extend the University's commitment to provide opportunities for full-time and part-time degree stud-

ies both on campus and off campus. Professional and career development courses and workshops offered by the Carleton Professional Development Centre are geared to the needs and skills of the '90s.

Carleton University's 29 buildings occupy a beautiful 62-hectare campus just 10 minutes drive south of Parliament Hill. A special feature of the campus is an extensive underground tunnel system which makes the University especially accessible for students who have mobility impairments. The MacOdrum Library houses more than a million volumes and an extensive collection of microfilms, archival material, maps, documents, and prints all accessed by an on-line catalogue system with terminals on every floor and via modems off campus. Accommodation for more than 1,600 students is provided in Carleton's six residence buildings. The Physical Recreation Centre houses facilities for a wide range of activities from individual fitness to interuniversity team competition in a number of sports. Special-interest clubs, public lectures, concerts, films, live theatre, and conferences add many other dimensions to enrich Carleton's campus life.

General Information on Undergraduate Academic Programs

Student Liaison and Publication Services
315 Robertson Hall
Carleton University
1125 Colonel By Drive
Ottawa, ON K1S 5B6
(613) 520-3663

Admission and Application for Undergraduate Programs

Office of Admissions and Academic Records
315 Robertson Hall
Carleton University
1125 Colonel By Drive
Ottawa, ON K1S 5B6
(613) 520-3663

Admission and Application for Graduate Programs

Faculty of Graduate Studies and Research
1512 Dunton Tower
Carleton University
1125 Colonel By Drive
Ottawa, ON K1S 5B6
(613) 520-2525

Special and Non-Degree Students

School of Continuing Education
302 Robertson Hall
Carleton University
1125 Colonel By Drive
Ottawa, ON K1S 5B6
(613) 520-3500

Scholarships, Awards and Bursaries

Awards Office
202 Robertson Hall
Carleton University
1125 Colonel By Drive
Ottawa, ON K1S 5B6
(613) 520-3600

The following are some terms frequently used throughout this Calendar, together with a brief explanation of their general meaning.

Academic Standing

The performance of all students is evaluated regularly to determine whether they are meeting the standards prescribed for continuing in their program. Standards and performance indicators vary according to individual Faculties and programs.

Audit

To audit a course is to attend without working for or expecting to receive formal credit. Formal registration is required and regular tuition fees apply. Students are not permitted to submit work or to write formal examinations. (See p. 43.)

Bachelor's Degree (Baccalaureate)

A university degree, for which a student follows an undergraduate degree program, (e.g. B.A.—Bachelor of Arts).

Bursary

A monetary award based on good academic standing and financial need.

Calendar

A university publication listing courses, degree requirements, faculty and university regulations, and names of faculty members.

CI - Continuation Index

The Continuation Index is one of the factors used in the Faculties of Arts and Social Sciences to determine students' academic standing in their degree program and eligibility for graduation. The method of determining the CI and the effects that it has on students are described in Sections 5 and 7 under Arts and Social Sciences Regulations.

Course

A unit of study in a given discipline identified by a unique number and name in a given department.

Credit

The weight value given to an academic course. The basic unit of academic work at Carleton is the full credit, which is indicated with a weight value of 1.0 on all records documents. A course marked with the symbol ★ has a weight value of one-half credit, and is indicated with a value of 0.5 on all records documents. Courses may have weight values greater than 1.0 (e.g. 1.5, 2.0, 2.5 credits), and are also indicated in this Calendar.

Department

A division of a faculty concerned with a specific branch of instruction of study.

Discipline

A branch of learning or a field of study.

Faculty

(a) A major teaching division of the University, divided into departments, schools or other units and headed by a dean. (e.g. Faculty of Arts);

(b) The academic teaching staff of the University.

Full-time student

A student who is registered in a minimum of 4.0 credits or the equivalent during the Fall/Winter session.

GPA - Grade Point Average

The Grade Point Average is a number calculated by dividing the number of grade points achieved in a set of successfully completed academic courses by the total credit value of those courses. A system of Weighted Grade Points is used in the Faculty of Engineering. Some individual departments in other faculties also use weighted grade points.

Honours Degree Program

A specialized university program, normally requiring four years or 20 full-credits or their equivalent to achieve the degree.

Internal Transfer

The process of applying for and receiving approval to change from one degree or certificate program to another. Applications for such transfers must be completed in accordance with published deadlines and applicants must meet the requirements of the program into which they wish to transfer.

itv

Instructional Television. The provision of courses to both on and off-campus students through cablevision and videocassette distribution services.

Letter of Permission

A statement provided to students by their home universities, giving them permission to take academic courses elsewhere and to transfer those courses to the home university. At Carleton, students must obtain such Letters from their Faculty Registrarial Services Offices, prior to taking the courses which are to be transferred.

Major(s)

The discipline(s) or field(s) in which a student specializes during the course of degree studies. In some programs, options(s) and program option(s) represent equivalent terminology.

Major Degree Program

A university program in the Faculty of Science, normally requiring three years or 15 full-credits or their equivalent to achieve the degree.

Mature Applicant

Individuals who lack normal entrance requirements as published in the Calendar, but who will be 21 years of age or over by December 31 of the year in which they wish to enroll, may receive consideration for admission to a degree program either on a full-time or part-time basis. (See p. 36.)

OAC

Ontario Academic Course. A prescriptive, provincially designed university entrance course.

Ombuds Service

An independent service which investigates individuals' grievances or complaints, reports findings and helps to achieve equitable settlements.

Part-Time Student

A student who is registered in fewer than 4.0 credits or the equivalent during any academic session.

Pass Degree Program

A university program in the Faculties of Arts and Social Sciences, normally requiring three years or 15 full-credits or their equivalent to achieve the degree.

Preclusion

A course that when successfully completed prevents a student receiving credit for another course because of the similarity or overlap in material. e.g. Business 42.171★ - "Precludes credit for Business 42.210★."

Prerequisite(s)

A course or courses that must be successfully completed before the student can register for the course described. In most cases, for example, the student must have taken a 100-level course in a particular discipline before being admitted to a course in the same discipline at the 200- or 300-level. The 100-level course is, therefore, a prerequisite.

Professional Development Course

A non-credit course, seminar or workshop offered through the Carleton Professional Development Centre. These courses, seminars and workshops carry no credit towards a university degree program and are not provincially funded.

Program

A group of approved courses, generally a combination of required and optional (elective) courses, which leads to a degree or certificate.

Program Year

Progress through a degree program is normally measured in terms of program years. Years are traditionally classified as First year, Second Year, and so on. Progression from one year to the next is determined either by the accumulation of credits or the completion of required patterns of credits.

Registration

The process of selecting, enrolling in, and remitting fees for courses for an academic session.

Scholarship

A monetary award based on academic achievement.

Special Student

A student not admitted to a degree program but registered in degree-credit courses to: qualify for admission, to improve professional or vocational qualifications, for transfer credit to another institution, or for personal interest.

Transfer Credit

Credit given for work done at another institution which may be granted for work completed prior to admission or during degree studies by means of a Letter of Permission.

Tuition Fees

Those fees assessed at registration for costs related to courses to be taken in the academic session. Tuition fees include laboratory and survey camps, where applicable. In addition compulsory miscellaneous fees are also assessed.

Undergraduate Student

A university student working towards a bachelor's degree.

Withdrawal

The formal procedure, according to regulations laid down by the University, of withdrawing from a course or courses, or from the University. (See p. 48.)

Undergraduate Studies

The following schedule contains the dates prescribed by the University Senate for academic activities and for procedures of academic administration.

The academic year is divided into two sessions.

Fall/Winter Session

The Fall/Winter session commences in September and continues until the end of the examination period in April. The *Fall term* of the Fall/Winter session consists of the months September to December. The *Winter term* consists of the months January to April. Courses are offered during the Day and the Evening.

Summer Session

The Summer session commences in May and continues until the end of the examination period in August. The *First term* of the Summer session commences in mid-May and continues until the end of June. The *Second term* commences in July and continues until mid-August. Courses are offered during the Day and the Evening.

Fall/Winter Session 1996-97

September 1

- Last day for receipt of applications from potential Fall graduates.

September 2

- Statutory holiday, University closed.

September 3

- Fall term begins.

September 3 - 6

- Preparation Week.

Academic and campus life orientation.

All students are expected to be on campus from the first day of Preparation Week. Class and laboratory preparations, departmental introductions for students, and other academic preparation activities will be held during the week.

September 3

Orientation events begin.

September 4 - 5

Academic preparation.

September 6

Other academic and campus life orientation events.

Orientation for Teaching Assistants.

September 6

- Last day to complete registration, including fee payment, for Fall/Winter session without incurring a late registration charge.
- Last day to withdraw from Fall/Winter and Fall-term courses, incurring only the Registration Charge.

- Last day to withdraw completely or change to part-time status, incurring only the Registration Charge.

September 7

- Cancellation of course selections for those students who have not concluded fee payment arrangements.

September 9

- Fall and Fall/Winter classes begin.
- Late registration begins.

September 20

- Last day for late registration.
- Last day to change courses or sections for Fall/Winter and Fall-term courses.

September 30

- Last day for receipt of applications for review of final grades and for supplemental and grade-raising examinations in Summer Session courses.

October 14

- Statutory holiday, University closed.

October 19

- Summer-session supplemental, deferred final and grade-raising examinations will be held.

November

- Fall convocation for the conferring of degrees, date to be announced.

November 8

- Last day to withdraw from Fall-term courses.
- Last day for any Fall-term fee adjustment when withdrawing from Fall-term or Fall/Winter courses.

December 1

- Last day for receipt of applications from potential Winter (February) graduates.
- Last day for receipt of applications for degree program transfers for Winter term of Fall/Winter session.

December 2

- Last day of Fall-term classes.
- Fall Term ends.
- Last day for handing in term assignments for Fall-term courses, subject to any earlier course deadline.

December 5 - 21

- Final examinations in Fall term courses and mid-term examinations in Fall/Winter courses may be scheduled as announced. **It may be necessary to schedule examinations during the day for classes held in the evening and vice versa.**

December 20

- Last day for entire fee adjustment when withdrawing from Winter-term courses.

January 3, 1997

- Last day to withdraw from Winter-term courses, incurring only the Registration Charge.

January 6

- Winter term and Winter-term courses begin.

- Last day to complete registration, including fee payment, for Winter term, without incurring a late registration charge.

January 11

- Cancellation of course selections for new January registrants who have not concluded fee payment arrangements.

January 17

- Last day for late registration for Winter-term courses.
- Last day to change courses or sections for Winter-term courses.

January 31

- Last day for receipt of applications for review of final grades and for supplemental and grade-raising examinations in Fall-term courses.

February 1

- Last day for receipt of applications from potential Spring graduates.
- Last day for receipt of applications for admission to the Bachelor of Architecture and the Bachelor of Social Work degree programs for the 1997/98 Fall/Winter session.

February 24 – 28

- Winter Break, classes suspended.
- Fall-term supplemental, deferred final and grade-raising examinations will be held.

March 1

- Last day for receipt of applications to the Bachelor of Music and Bachelor of Humanities degree programs for the 1997/98 Fall/Winter session.

March 14

- Last day to withdraw from Fall/Winter and Winter-term courses.
- Last day for any Winter-term fee adjustment when withdrawing from Winter-term or Fall/Winter courses.

March 28

- Statutory holiday, University closed

April 1

- Last day for receipt of applications for admission to a program (except Bachelor of Architecture, Bachelor of Music, and Bachelor of Social Work), for the 1997/98 Fall/Winter session, from candidates whose documents originate outside Canada or the United States.

April 7

- Last day of Fall/Winter and Winter-term classes. Classes scheduled on this day will be those appropriate to a Friday. Some lectures, laboratories, review tutorials, etc. may take place in Review Week until the end of Winter term on April 11.

April 8 - 11

- Review Week.
- Some lectures, laboratories, review tutorials, etc. may take place.

April 11

- Winter term ends.

April 14

- Last day for handing in term assignments, subject to any earlier course deadline.

April 14 – 29

- Final examinations may be scheduled as announced. **It may be necessary to schedule examinations during the day for classes held in the evening and vice versa.**

May 1

- Last day for receipt of applications for admission to the Bachelor of Journalism program for the 1997/98 Fall/Winter session.

June 1

- Last day for receipt of applications for admission to a program (except Bachelor of Architecture, Bachelor of Journalism, Bachelor of Music and Bachelor of Social Work) for the 1997/98 Fall/Winter session from mature applicants, from those presenting post-secondary education qualifications and from those transferring from other universities in Canada or the United States.
- Last day for receipt of applications for admission to a program (except Bachelor of Architecture, Bachelor of Journalism, Bachelor of Music and Bachelor of Social Work) from applicants with high school qualifications from Canada or the United States.

June

- Spring convocation for the conferring of degrees, date to be announced.

June 30

- Last day for receipt of applications for review of final grades and for supplemental and grade-raising examinations in Fall/Winter and Winter-term courses.
- Last day for receipt of applications for internal degree transfers to allow for registration for the 1997/98 Fall/Winter session.

August 5 – 15

- Supplemental, deferred final and grade-raising examinations may be scheduled as announced.

Summer Session 1997

March 1, 1997

- Last day for receipt of applications for consideration for admission to a degree program for the 1997 Summer session.

May 1

- Last day for receipt of applications for degree program transfers for the 1997 Summer session.

May 13

- Last day to complete registration, including fee payment, for First-term and full-session courses, without incurring a late registration fee.

May 14

- Full-session and First-term courses begin.

May 19

- Statutory holiday, University closed.

May 21

- Last day for late registration and course changes for First-term and full-session courses.

June 13

- Last day to withdraw from First-term courses.
- Last day for any First-term fee adjustment when withdrawing from First-term or full-session courses.

June 24

- Last day of classes for First-term. (Note: Full-session classes resume July 2.)
- Last day for handing in term assignments, subject to any earlier course deadline.

June 25 - 27

- First-term final examinations may be scheduled. **It may be necessary to schedule examinations during the day for classes held in the evening and vice versa.**

July 1

- Statutory holiday, University closed.

July 2

- Second-term courses begin.
- Last day to complete registration, including fee payment, for Second-term courses, without incurring a late registration charge.

July 8

- Last day for late registration and course changes for Second-term courses.

July 31

- Last day to withdraw from full-session and Second-term courses.
- Last day for any Second-term fee adjustment when withdrawing from Second-term or full-session courses.

August 4

- Civic holiday, University closed.
- Evening classes missed may meet August 8.

August 12

- Last day of Summer-session classes.
- Last day for handing in term assignments, subject to any earlier course deadline.

August 13 - 16

- Summer-session examinations may be scheduled as announced. **It may be necessary to schedule examinations during the day for classes held in the evening and vice versa.**

September 30

- Last day for receipt of applications for review of final grades and for supplemental and grade-raising examinations in Summer-Session courses.

October 25

- Summer-session supplemental, deferred final and grade-raising examinations will be held.

The Organization of the University

Carleton University has Faculties of Arts, Social Sciences, Engineering, Science, and Graduate Studies and Research. In addition there are Schools of Computer Science and Continuing Education. The School for Studies in Art and Culture and The School of Journalism and Communication are associated with the Faculty of Arts. The School of Business, the School of Public Administration, the School of Social Work, the Institute of Central/East European and Russian-Area Studies and the Institute of Women's Studies are associated with the Faculty of Social Sciences. The Institute of Biochemistry is associated with the Faculty of Science. The Faculty of Engineering includes the School of Architecture and the School of Industrial Design.

The Faculty of Graduate Studies and Research includes the School of Canadian Studies, the Norman Paterson School of International Affairs, Carleton International and the School of Social Work.

The University offers programs of undergraduate study leading to bachelors' degrees in arts, journalism, public administration, commerce, humanities, international business, music, social work, science, computer science, engineering, architecture and industrial design; and to certificates in public service studies, teaching English as a second language, English language and composition, law enforcement studies, French language studies and French translation studies. The University's Faculty of Graduate Studies and Research offers programs leading to degrees in Master of Arts, Master of Journalism, Master of Science, Master of Engineering, Master of Social Work, Master of Computer Science, Master of Management Studies, and Doctor of Philosophy studies in various fields. It also offers a program leading to a Graduate Diploma in Public Administration.

How to Use the Calendar

For ease of use, this *Calendar* is divided into four sections: The University; The Faculties; The Academic Units and Programs; and Reference. The items in the Table of Contents (p. 2) are arranged alphabetically within each section, and the Index (p. 572) can be used to find specific information within these sections.

The *Calendar* is also available on the Internet. The electronic version is normally available within two months after the publication of the print version (i.e. by June 1). Earlier versions – back to 1993-94 – are also available. These electronic versions can be accessed at gopher.carleton.ca and at <http://www.carleton.ca> (under the Admissions, Programs and Courses option). Every effort has been made to ensure the accuracy of the electronic versions, but in the case of any discrepancy, the printed *Calendar* shall be considered to be the University's official statement.

Students at Carleton are governed by regulations at the University level, at the Faculty level, and at the

level of their academic unit. Most academic units share common Faculty regulations with others, and to note which Faculty a particular unit belongs to, this *Calendar* lists the Faculty affiliation, in parentheses, under the name of the unit, on the first page of its section. Where a unit offers degrees in two Faculties, both Faculties are listed.

Three units – Architecture, Computer Science, and Industrial Design – have unique regulations, and so no Faculty affiliation is shown for them. These three units have administrative connections to the Faculties (Architecture and Industrial Design to the Division of Engineering, and Computer Science to the Faculty of Science), but their regulations are self-contained; students enrolled in these units are still subject to general University regulations.

Administration of Regulations

Students are responsible for ensuring that the courses in which they register conform to the requirements of their academic program. The regulations published in this *Calendar* include the main legislation governing admission, standing and graduation for undergraduate study as approved by the Senate. Advice on more specific rules or interpretations that may affect a student's academic status is available from departmental and Registrarial Services offices.

Students have the right to appeal the application of a regulation, and should enquire about procedures at the appropriate Registrarial office.

Registrarial Services

Registrarial services are available to students through the following offices:

New Applicants and Prospective Students

The Office of Admissions and Academic Records (Student Liaison)
315 Robertson Hall
Telephone: 520-3663

Current Undergraduate Degree and Certificate Students

*Faculty of Arts
(including Humanities, Journalism and Communication, and Music)*
318 Paterson Hall
Student Records: 520-7460
Advising: 520-7462

*Faculty of Social Sciences
(including Business, Public Administration and Social Work)*
D382 Loeb Building
Student Records and Advising: 520-3902

*Faculty of Engineering
(including Architecture and Industrial Design)*
2090 Minto Case Building
Telephone: 520-5668

Faculty of Science
(including Computer Science)
2201 Herzburg Laboratories
Telephone: 520-4440

Special Students

School of Continuing Education
302 Robertson Hall
Telephone 520-3500

Classification of Students

For purposes of studying at Carleton University and for the administration of regulations governing these studies, the following student classifications are recognized.

Full-Time Undergraduate Student

A student who is registered in a minimum of 4.0 credits or the equivalent during the Fall/Winter session.

Part-Time Undergraduate Student

A student who is registered in fewer than 4.0 credits or the equivalent during any academic session.

Special Student

A student who is registered in a degree-credit course or courses but who has not been formally admitted to an undergraduate program.

Professional Development Student

A student who is registered in a professional development course, seminar or workshop offered through the Carleton Professional Development Centre (the training division of the Carleton University Development Corporation).

Type of Instruction

Carleton University courses use many different types of instruction. A course may use more than one of the various types of instruction. The types of instruction - using the abbreviations - are indicated in the Class Schedule booklet.

The various Types of Instruction are:

Film Screening (FLM)
Discussion Group (GRP)
Laboratory (LAB)
Lecture (LEC)
Seminar (SEM)
Tutorial (TUT)
Workshop (WKS)

Students can expect to have courses in their programs of study which use any type of instruction. In addition students can expect to have classes and/or examinations on campus scheduled any time between 08:30 and 22:00. In this regard attention is

drawn to the statement regarding examinations (see p. 50 for a fuller statement):

It may be necessary to schedule mid-year and final examinations for classes held in the evening during the day and vice versa.

Senior Citizens: Tuition Fees

All persons 60 years of age and over as of the last day for late registration may register in degree-credit courses and have their tuition fees waived. The only charge to these students is a \$5.00 per session registration fee, plus Accident/Sickness Insurance charge (applicable to full-time studies).

Smoking Policy

All academic and administrative offices are smoke-free. Smoking is allowed only in the specified sections of the University Centre, Commons Building and residences.

Other Calendars

Graduate Studies and Research Calendar

Available from:

Dean of Graduate Studies and Research
1512 Dunton Tower
Carleton University
1125 Colonel By Drive
Ottawa, Ontario, Canada K1S 5B6

Summer Session Supplement

Available from:

Continuing Education
302 Robertson Hall
Carleton University
1125 Colonel By Drive
Ottawa, Ontario, Canada K1S 5B6

Professional and Career Development Catalogue

Directory of Courses Available from:

Carleton Professional Development Centre
Suite 3600
Carleton Technology and Training Centre
Carleton University Campus
Ottawa, Ontario, Canada
K1S 5R1

Course Values

The basic unit of academic work is the *full credit*, which is indicated with a value of 1.0 on all records documents.

A course marked ★ is a *half credit* and is indicated with a value of 0.5 on all records documents.

Course Numbering Pattern

Course numbers consist of a prefix number, which indicates the department, school, or committee under whose auspices the course is offered, and a suffix number, which indicates the year of study in which the course is usually taken. When the suffix number of an individual course is changed from one year to the next, the old number is noted, for one year only, in parentheses next to the new number in the appropriate "Courses Offered" list.

Prefix Numbering

- 02 Interdisciplinary Arts
- 03 Interdisciplinary Social Sciences
- 04 Interdisciplinary Arts and Social Sciences
- 08 Art and Culture
- 09 Women's Studies
- 10 Interdisciplinary Humanities
- 11 Art History
- 12 Canadian Studies
- 13 Classical Civilization
- 14 Classics
- 15 Greek
- 16 Latin
- 17 Comparative Literary Studies
- 18 English Language and Literature
- 19 Film Studies
- 20 French
- 21 English as a Second Language
- 22 German
- 23 Applied Language Studies
- 24 History
- 26 Italian
- 27 Mass Communication
- 28 Journalism
- 29 Linguistics and Applied Language Studies
- 30 Music
- 32 Philosophy
- 34 Religion
- 36 Russian
- 38 Spanish
- 42 Business
- 43 Economics
- 44 Political Economy
- 45 Geography
- 46 International Affairs

- 47 Political Science
- 49 Psychology
- 50 Public Administration
- 51 Law
- 52 Social Work
- 53 Sociology
- 54 Anthropology
- 55 East European Studies
- 56 Sociology-Anthropology
- 59 Multidisciplinary Technology, Society, Environment
- 60 Integrated Science Studies
- 61 Biology
- 62 Environmental Science
- 63 Biochemistry
- 65 Chemistry
- 67 Geology
- 69 Mathematics (Majors)
- 70 Mathematics (Honours)
- 75 Physics
- 76 Architecture
- 77 Architecture
- 78 Architecture
- 79 Architecture
- 80 Architecture Design
- 81 Environmental Engineering
- 82 Civil Engineering
- 85 Industrial Design
- 86 Mechanical and Aerospace Engineering
- 87 Aerospace Engineering
- 88 Mechanical Engineering
- 90 Engineering, Concentration in Management
- 91 Engineering, Common Core
- 93 Information and Systems Science
- 94 Systems and Computer Engineering
- 95 Computer Science
- 97 Electronics
- 99 Engineering Projects

Suffix Numbering

- 001-099
Courses usually taken in Qualifying-University year
- 100-199
Courses usually taken in First year
- 200-299
Courses usually taken in Second year
- 300-399
Courses usually taken in Third year
- 400-499
Courses usually taken in Fourth-year Engineering, Fourth- and Fifth-year Architecture, and Fourth-year (Honours) Arts, Social Sciences, Science and Computer Science.
- 500-699
Courses usually taken by Graduate students

Programs of graduate study, first offered at Carleton in 1954, provide opportunities for advanced study, research and critical scholarship in a number of disciplines. Carleton's libraries, laboratories and other research facilities enable graduate students to perform scholarly work of consistently high calibre, and help to foster a spirit of independent investigation.

The location of Carleton University and the University of Ottawa enables graduate students to take advantage of the research facilities connected with many national institutions and government departments.

Carleton University and the University of Ottawa have developed a number of joint programs at the graduate level. The details of these programs are given under the appropriate academic unit in the *Graduate Calendar*.

Where formal joint programs do not exist, a graduate student may be permitted to follow up to two full courses at the University of Ottawa. Moreover, there are reciprocal arrangements worked out among departments, institutes and schools at both universities to involve students, when it is desirable, in parts of the program of research and studies at the other institution. All interested students should consult the Chair/Director of their department, institute or school, prior to registration, in order to obtain further information on particular departmental conditions of eligibility and procedures.

Graduate programs currently offered at Carleton are the following:

Graduate Diploma in Public Administration (D.P.A.)

Master of Architecture (M.Arch.)

Master of Arts (M.A.)

Anthropology, Applied Language Studies, Canadian Art History, Canadian Studies, Central/East European and Russian-Area Studies, Communication, Comparative Literary Studies, Economics, English, French, Geography, German, History, International Affairs, Legal Studies, Philosophy, Political Economy, Political Science, Psychology, Public Administration, Religion, Sociology, and Spanish.

Master of Computer Science (M.C.S.)

Master of Engineering (M.Eng.)

Aerospace, Civil, Electrical, Materials, Mechanical Engineering, and Telecommunications Technology Management.

Master of Journalism (M.J.)

Master of Management Studies (M.M.S.)

Master of Science (M.Sc.)

Biology, Chemistry, Earth Sciences, Information and Systems Science, Mathematics, and Physics.

Master of Social Work (M.S.W.)

Doctor of Philosophy (Ph.D.)

Biology, Chemistry, Comparative Literary Studies, Computer Science, Earth Sciences, Economics, Engineering (Aerospace, Civil, Electrical, and Mechanical), Geography, History, Management, Mathematics, Physics, Political Science, Psychology, Public Policy and Sociology.

Joint programs with the University of Ottawa are offered in the following areas: Civil Engineering, Electrical Engineering, Mechanical and Aerospace Engineering, Biology, Chemistry, Computer Science, Earth Sciences, Mathematics and Statistics, Physics, and Economics. The Department of Psychology offers a joint specialization in Neuroscience.

The Departments of Biology, Chemistry and Psychology offer a collaborative program in Chemical and Environmental Toxicology.

The Norman Paterson School of International Affairs and the Common Law Section of the Faculty of Law at the University of Ottawa offer a joint Master of Arts in International Affairs and Bachelor of Laws degree (M.A./LL.B.).

Research

Organized research units conduct research in such fields as heritage conservation, statistics and probability, intelligent systems, women and work, media and communications, earthquake engineering, environmental impact assessment, and telecommunications technology management.

In addition, many interesting research projects are thriving, which are outlined in the biennial publication *Research and Studies*, available from the Office of Research Services, Carleton University, 1125 Colonel By Drive, Ottawa, Canada K1S 5B6.

Research and Studies is also available on-line at: URL <http://www.carleton.ca>

Special Students

Students interested in pursuing graduate studies at Carleton are urged to note the following University regulation: a candidate who has completed courses as a Special student is not normally permitted to transfer such courses for degree credit in the Faculty of Graduate Studies and Research.

Graduate Studies and Research Calendar and Information

The studies of each candidate will be directed by a department, institute, or school, and are governed by the general regulations outlined in the *Graduate Calendar* of the Faculty of Graduate Studies and Research. To obtain further information on graduate studies, contact the Graduate Supervisor of the individual unit concerned, or:

Faculty of Graduate Studies and Research
Carleton University
1125 Colonel By Drive,
Ottawa, Canada K1S 5B6
Telephone: (613) 520-2525
Fax: (613) 520-4049.

The *Graduate Calendar* is also available on-line at: URL <http://www.carleton.ca>

Administrative Offices

Academic Records

Statements of marks, transcripts, confirmation of enrolment or graduation, and assistance with the touch-tone registration system.

Monday to Friday, 9:00 a.m. - 5:00 p.m.

405 Robertson Hall

520-3607

520-3606 (transcripts)

520-2600, ext. 3666 (Touchtone Help Line)

Admissions

Information and applications for all undergraduate programs, calendars, tours, high school liaison.

Monday to Friday, 9:00 a.m. - 5:00 p.m.

315 Robertson Hall

520-3663

520-4455 (TDD service)

520-3847 (fax)

Athletics

Swimming pool, fitness centre, weight rooms, Nautilus, intramural and varsity sports, fitness classes, fitness testing and lessons.

520-4480 (athletics office)

520-5655 (tuck shop - squash and tennis bookings)

520-5631 (recorded message hours)

Awards Office

OSAP, Canada Student Loans, emergency loans, bursaries, scholarships, financial counselling.

Monday to Friday, 10:30 a.m. - 4:30 p.m. (walk-in)

9:00 a.m. - 5:00 p.m. (phone-in)

202 Robertson Hall

520-3600

520-3560 (fax)

Board of Governors

607 Robertson Hall

520-3811

520-3731 (fax)

Bookstore

University textbooks, stationery supplies, magazines, Carleton merchandise, special orders.

Monday to Thursday, 9:00 a.m. - 9:00 p.m.

Friday, 9:00 a.m. - 4:30 p.m.

Third floor, Southam Hall

520-3832

Business Office

Tuition payments and tax receipts, overdue accounts, new or replacement student cards.

Monday to Friday, 9:00 a.m. - 4:00 p.m.

Third floor, Robertson Hall

520-3626

Carleton Professional Development Centre

For information and registration in workshops for professional and career development.

Monday to Friday, 8:30 a.m. - 5:00 p.m.

3600 Carleton Technology and Training Centre

521-1988

521-7794 (fax)

Carleton University Development Corporation (CUDC)

Wholly owned by Carleton University, CUDC is mandated to support the academic and research activities of the University through the production of revenues from commercial endeavours including technology transfer, training and professional development, and development of University-owned lands.

3600 Carleton Technology and Training Centre

521-1988

521-7794 (fax)

Carleton University Press (CUP)

Incorporated in 1982, Carleton University Press is wholly owned by Carleton University. The Press publishes significant texts in a wide range of fields including several major series: The Carleton Library; Carleton Informatics; Centre for Editing Early Canadian Texts; Changing Americas; Harbinger Poetry; Public Policy; and Women's Experience.

1400 Carleton Technology and Training Centre

520-3740

520-2893 (fax)

Carleton University Students' Association (CUSA)

Student services such as: typing and binding service, auxiliary health insurance plan, student handbook, clubs and societies, International Students' Centre, Women's Centre, Peer Counselling Centre, Volunteer Bureau, Gay, Lesbian, Bisexual Centre, Mature and Part-time Students' Centre, Disability Awareness Centre, Unicentre Store, Rooster's, Oliver's, the games arcade, funding for *The Charlantan*, CKCU-FM, Ombuds Services, and Information Carleton.

Monday to Thursday, 8:30 a.m. - 8:00 p.m.

Fridays, 8:30 a.m. - 4:30 p.m.

401 University Centre

520-6688

520-3704 (fax)

Continuing Education

Registrar's office for all Special students, information on instructional television courses, calendars for non-degree students.

Monday to Friday, 9:00 a.m. - 5:00 p.m.

Monday to Thursday evenings, 6:30 - 8:30 p.m.

302 Robertson Hall

520-3500

520-4456 (fax)

Counselling and Student Life Services

Personal counselling for students, staff and faculty, career interest testing, library of calendars from Ca-

nadian and foreign universities, resource centre, foreign student advisory service, and academic assistance workshops.

Monday to Friday, 9:00 a.m. - 5:00 p.m.

Monday evenings, 5:00 - 8:00 p.m.

501 University Centre

520-6600

520-7605 (TDD Service)

420-3995 (fax)

Development and Alumni Services

Secures funding for the University to support the library, student aid, and other specific projects. Administers the Alumni Association which sponsors reunions and an alumni award program, assists branches and chapters to organize various activities, and produces a quarterly *Carleton University Magazine*.

510 Robertson Hall

520-3636

520-3587 (fax)

Health Services

Medical appointments, walk-in service, psychiatric counselling, health and nutrition information.

Monday to Friday, 9:00 a.m. - 5:00 p.m.

2600 Carleton Technology and Training Centre

520-6674

520-4059 (fax)

Housing and Food Services

Information about residence accommodation, off-campus housing, and food services and meal plans.

Monday to Friday, 9:00 a.m. - 5:00 p.m.

261 Stormont House

520-5612 (residence accommodation)

520-5614 (off-campus accommodation)

520-3952 (fax for both)

Information Carleton

General enquiries on University services, facilities and programs; University phone numbers, office hours and locations; events, schedules.

Monday to Thursday, 8:30 a.m. - 6:30 p.m.

Friday 8:00 a.m. - 5:00 p.m.

Fourth floor, University Centre

520-7400

520-6620 (TDD service)

520-7455 (fax)

Instructional Television (itv)

Serving students both on and off campus, courses are offered through cable and video cassette distribution from four undergraduate faculties during the Fall, Winter, and Summer terms.

302 Robertson Hall

520-2600, ext. 8560 (on-campus services)

520-4042 (off-campus services)

520-4456 (fax)

Lost and Found

The Carleton University Students' Association is responsible for the campus lost and found service.

131-D University Centre

520-6666 (lost and found)

University Safety (campus police and security services) is responsible for lost or found bicycles and vehicles.

203 Robertson Hall

520-3612

MacOdrum Library

Main University library, extensive reference and government documents sections, on-line library catalogue (CUBE), CD-ROM and on-line literature searching, student microcomputer rooms, access to campus network services, tours and reference/research assistance, reserve readings for courses, and photocopying centre.

Fall/Winter Terms

Monday to Friday, 8:00 a.m. - 11:00 p.m.

Saturday and Sunday, 10:00 a.m. - 11:00 p.m.

Spring/Summer Intersessions

Monday to Friday, 9:00 a.m. - 5:00 p.m.

Saturday and Sunday, - closed

Summer Term

Monday to Thursday 9:00 a.m. - 10:00 p.m.

Friday 9:00 a.m. - 5:00 p.m.

Saturday 12:00 p.m. - 5:00 p.m.

Sunday -closed

The Library closes for all statutory and civic holidays except Good Friday and Easter Monday.

These hours are subject to change.

520-5621 (library hours - recording)

520-2735 (information/reference desk)

520-2734 (circulation)

520-2750 (fax)

520-2515 (Map Library, D299 Loeb Building)

Placement and Career Services

Carleton's focal point for career planning and job placement. Services include: postings for permanent, summer, and part-time jobs; co-ordination of on-campus recruitment programs, career library and job search information.

Monday to Friday, 9:00 a.m. - 5:00 p.m.

508 University Centre

520-6611

President's Office

601 Robertson Hall

520-3801

520-4474 (fax)

Registrars' Offices

Information and assistance for degree students on all academic regulations, declaration (change of major/honours), late withdrawals, petitions, changes of address, letters of permission and academic audits.

Arts

318 Paterson Hall

520-7460

520-3713 (fax)

Social Sciences

D382 Loeb Building

520-3902

520-2392 (fax)

Engineering

2090 Minto Centre
520-5668
520-5682 (fax)

Science

2201 Herzberg Laboratories
520-4440
520-4389 (fax)

Continuing Education

Special Students
302 Robertson Hall
520-3500
520-4456 (fax)

Senate Office

607 Robertson Hall
520-4478
520-3731 (fax)

University Services (Campus Card Office)

New or replacement student cards.
Monday to Friday, 8:30 a.m. - noon, 1:00 - 4:30 p.m.
Monday and Thursday evenings, 5:00 - 7:00 p.m.
107 Robertson Hall
520-2363

University Hours of Operation

Winter Hours

Labor Day - April 30
Office hours are Monday to Friday, 9:00 a.m. - 5:00 p.m.

Summer Hours

May 1 - Labour Day
Office hours are Monday to Friday, 8:30 a.m. - 4:30 p.m.

Most University offices are closed for lunch between 12 noon and 1:00 p.m.

Some offices keep evening hours:

Information Carleton

Monday to Thursday
8:30 a.m. - 6:30 p.m.

Continuing Education

Monday to Thursday
6:30 - 8:30 p.m.

Bookstore

Monday to Thursday
8:30 a.m. - 8:30 p.m.

Counselling and Student Life Services

Monday
5:00 - 8:00 p.m.

The library, cafeterias, and the athletics complex are open in the evenings.

Academic Departments

Aboriginal Studies: see Institute for Interdisciplinary Studies

Accounting: see Business, School of

Aerospace Engineering: 3135 Mackenzie Building, 520-5684

African Studies: see Institute for Interdisciplinary Studies

Anthropology: see Sociology-Anthropology
Applied Language Studies, Centre for: 215 Paterson Hall, 520-6613

Architecture, School of: 202 Architecture Building, 520-2855

Art and Culture, School for Studies in: 423 St. Patrick's Building, 520-3993

Art History: 423A St. Patrick's Building, 520-2342

Asian Studies: see Institute for Interdisciplinary Studies

Biochemistry, Institute of: 203 Steacie Building, 520-3523

Biology: 587 Tory Building, 520-3888

Business, School of: 710 Dunton Tower, 520-2388

Canadian Studies, School of: 1206 Dunton Tower, 520-2366

Central/East European and Russian-Area Studies, Institute of: 459 Paterson Hall, 520-2888

Chemistry: 203 Steacie Building, 520-3841

Child Studies: see Institute for Interdisciplinary Studies

Civil and Environmental Engineering: 3432 Mackenzie Building, 520-5784

Classics: 2015 Dunton Tower, 520-2301

Cognitive Science: see Institute for Interdisciplinary Studies

Comparative Literary Studies, School for: 1701 Dunton Tower, 520-2177

Computer Science, School of: 5302 Herzberg Laboratories, 520-4333

Criminology and Criminal Justice: D485 Loeb Building, 520-2588

Directed Interdisciplinary Studies: see Institute for Interdisciplinary Studies

Earth Sciences: 304 Tory Building, 520-4400

Economics: C876 Loeb Building, 520-3744

Electronics: 5170 Mackenzie Building, 520-5754

English Language and Literature: 1812 Dunton Tower, 520-2310

English as a Second Language: 215 Paterson Hall, 520-6613

Environmental Science: 2269 Herzberg Laboratories, 520-3859

Environmental Studies: B433C Loeb, 520-2600 ext. 8370

Film Studies: 423 St. Patrick's Building, 520-5606

French: 1602 Dunton Tower, 520-2168

Geography: B349 Loeb Building, 520-2561

German: 1315 Dunton Tower, 520-2116

History: 400 Paterson Hall, 520-2828

Humanities: 520-2809

Industrial Design, School of: 3470 Mackenzie Building, 520-5672

Integrated Science Studies: 2279 Herzberg Laboratories, 520-3890

Interdisciplinary Studies, Institute for: 2216 Dunton Tower, 520-2368

International Affairs, Norman Paterson School of:
 2A55 Paterson Hall, 520-6655
 Italian: 1315 Dunton Tower, 520-2108
 Journalism and Communication, School of: 346 St.
 Patrick's Building, 520-7404
 Labour Studies: see Institute for Interdisciplinary
 Studies
 Latin American and Caribbean Studies: see Institute
 for Interdisciplinary Studies
 Law: C473 Loeb Building, 520-3690
 Law Enforcement Studies: D485, Loeb Building 520-
 2588
 Linguistics and Applied Language Studies: 249 Pat-
 erson Hall, 520-2802
 Mass Communication: 310 St. Patrick's Building,
 520-7408
 Mathematics and Statistics: 4302 Herzberg Labora-
 tories, 520-2155
 Mechanical and Aerospace Engineering: 3135 Mack-
 enzie Building, 520-5684
 Medieval Studies: see Institute for Interdisciplinary
 Studies
 Music: A911 Loeb Building, 520-5770
 Philosophy: 2123 Dunton Tower, 520-2110

Physics: 3302 Herzberg Laboratories, 520-4377
 Political Science: B640 Loeb Building, 520-2777
 Psychology: B552 Loeb Building, 520-2644
 Public Administration, School of: 1022 Dunton
 Tower, 520-2547
 Religion: 2121 Dunton Tower, 520-2100
 Russian: 3A38 Paterson Hall, 520-6646
 Social Work, School of: 509 Dunton Tower, 520-5601
 Sociology-Anthropology: B750 Loeb Building, 520-
 2582
 Spanish: 1419 Dunton Tower, 520-2109
 Systems and Computer Engineering: 4462 Macken-
 zie Building, 520-5740
 Technology, Society, Environment Studies: 460
 Steacie Building, 520-4483
 United States Studies: see Institute for Interdiscipli-
 nary Studies
 Urban Studies: see Institute for Interdisciplinary
 Studies
 Visual and Performing Arts: see School for Studies in
 Art and Culture
 Women's Studies, Pauline Jewett Institute of: A812
 Loeb Building, 520-6645

Athletics and Recreation

Physical Recreation Centre

Telephone: 520-4480 or 520-5631 (recording)

The physical recreation program has been designed to meet three general areas of interest: interuniversity athletics, intramurals, and recreational skill instruction. Although many university students enjoy the challenge and excitement of interuniversity athletics, others frequently prefer a less demanding level of competition in Carleton's intramural program, while yet another segment of the University community desires physical expression almost completely devoid of competition.

To meet these needs, skill-instruction classes are offered in dance, fitness, ju-jitsu, karate, squash, swimming, table tennis, tai chi, tennis and yoga. Program registration for the 1996-97 Fall/Winter session is on Tuesday, September 10, 1996 from 4:45 to 6 p.m. in the gymnasium.

The intramural program includes golf, badminton, softball, touch football, soccer, volleyball, hockey, squash, pool, basketball, broomball, ball hockey, tennis and snow football. Some of these activities are co-educational.

Carleton's Varsity teams for men (The Ravens) participate in basketball, football, rugby, soccer, swimming, waterpolo, cross-country skiing and fencing. The University is a member of the Ontario Universities Athletic Association.

The women's Varsity teams (The Ravens) participate in basketball, volleyball, swimming, cross-country skiing, fencing, field hockey, rowing, soccer and waterpolo. The University is also a member of the Ontario Women's Intercollegiate Athletic Association.

The University's outdoor athletic facilities include football and soccer fields, a broomball rink and five tennis courts. The indoor facilities consist of a fifty-metre pool and ten-metre diving platform; a fitness centre with jogging track, weight training and fitness testing equipment; a large double gymnasium with a combatives room; nine international squash courts; Nautilus Centre; and heavy-weight training room. The facilities may be available to students either for recreational needs or for organized competition.

The athletics program at Carleton is governed by an Athletics Board, which advises the University on matters of athletics and recreation policy, through the Office of the President. The Board is comprised of members from the Faculty, Administration, the Students' Associations and the Residence Association.

Awards Office

202 Robertson Hall
Telephone: 520-3600
Fax: 520-3560

Medals are the major academic awards granted by the University to its superior graduating scholars. They have no monetary value.

The Awards Office is responsible for the administration of undergraduate scholarship and bursary programs and loans for graduate and undergraduate students.

Scholarships are awarded on entry to the University and to those in course on the basis of superior academic performance. Applications are not required except for the top eight entrance scholarships. (See p. 520.)

Awards and prizes are awarded for excellence in particular areas of study. They may be cash awards or book prizes. Applications are not required.

Administration of Awards

1. Students receiving scholarships and bursaries exceeding in total \$500, and which are under the jurisdiction of the University, will ordinarily be paid in two installments, one in October and one in January. The University reserves the right to withhold the payment of the second installment in cases where students do not meet the conditions of the award. Awards of less than \$500 will ordinarily be paid in one installment, in October.

2. Scholarship and bursary recipients who withdraw before the completion of their year will be expected to refund their bursaries or scholarships (or a portion thereof).

Financial Aid for Students

Bursaries

Bursaries are awarded to students who can show genuine need of financial assistance to meet their educational expenses. Students are expected first to make use of all resources available to them and to apply for government assistance.

Recipients for bursaries will normally be selected in December and February of each year, but applications may be considered at other times of the year in exceptional circumstances, if funds permit. An application, available in the Awards Office, is required for bursaries that are administered by Carleton.

Government Aid Programs

Ontario Residents

Canadian citizens or permanent residents who are residents of Ontario may qualify for assistance from the Ontario Student Assistance Program. The financial aid scheme is designed to supplement, rather than replace, family and/or student resources. In order to determine the additional funds required, the province objectively assesses the resources of the family and/or the student that could reasonably be used to provide for the student's educational costs. The assistance could be in the form of a Canada Student Loan and/or Ontario Student Loan. The maximum loan a student can receive in one academic year is usually the total amount of his or her allowable educational costs. Application forms and further information can be obtained by contacting the Awards Office at Carleton or the Student Awards Branch of the Ministry of Education and Training, P.O. Box 4500, Thunder Bay, Ontario P7B 6G9.

Students wishing to have applications processed in time for Fall registration must ensure that completed forms are submitted to the Awards Office by July 1.

Residents of Other Provinces/Territories Except Quebec

Canadian citizens or permanent residents from the territories and all other provinces except Quebec may qualify for assistance from the *Canada Student Loans Plan* through their home province. The maximum loan available per academic year is currently \$165 a week. The loan is interest free while the student is enrolled in a 60 percent course load. Some provinces also make available non-repayable grant assistance along with this federal loan.

The Awards Office disburses general information on the various provincial aid schemes but application forms and details on individual programs must be obtained from the authorities in the home province. Deadline dates vary but, generally speaking, it is wise to apply for financial assistance through the appropriate provincial department before June 30.

Quebec Aid

Deadline dates for submission of applications are: June 30 or within 45 calendar days of the date indicated on the offer of admission from the University.

Part-Time Students

Solely for purposes of federal/provincial financial aid schemes (except Quebec), part-time students are classified as those enrolled in fewer than three full-credit courses. These students are advised to contact the Awards Office for information on the availability of financial aid for part-time study.

Placement and Career Services

508 University Centre
Telephone: 520-6611
Fax: 520-5695

Placement and Career Services is the on-campus student employment centre. Services provided by this office include:

Job Postings

Casual, part-time, and summer jobs are posted on the self service job boards within the office. Full-time jobs are posted in the full-time binders in the reference library.

In addition, an electronic Job Bank kiosk is available to students on a 24-hour basis, courtesy of Placement and Career Services and Human Resources Development Canada located on the Fourth level of the University Centre (next to the Faculty Club). The kiosk provides information on jobs processed through the Canada Employment Centre chain. Jobs in the system are both local and national in nature.

On Campus Recruiting

Every year a number of employers visit Carleton to recruit graduating students seeking permanent employment. Recruiting begins in mid-September and

continues to March. Deadlines for applications are advertised in the *Charlatan* once every two weeks and are also listed in the *Bi-Weekly Bulletin* which is posted in the showcase outside the office.

Alumni/ae Referral Service

Throughout the year, employers contact Placement and Career Services seeking qualified candidates for immediate job openings. All positions are posted within the office and then selectively file searched. A file search involves contacting qualified Carleton alumni/ae registered with the service and referring them to employers. Alumni/ae may register with the service one month prior to graduation and may remain on file up to three years after graduation.

Employment Counselling

Group workshops are held on a weekly basis on resume writing/cover letters, interview techniques and job search/networking skills. Students and alumni/ae may register to attend by signing up with our reception staff. A resume critiquing service is also available but only to resume session participants.

Career Fair

Placement and Career Services hosts a Career Fair early in October. Employers visit the campus to answer student inquiries and raise awareness of permanent job opportunities and career possibilities.

During the last week in January or the first week in February, Carleton University, Algonquin College, University of Ottawa and La Cité Collégiale host a joint summer job fair. Employers advertise their summer employment opportunities to all students currently enrolled in full- or part-time studies. This is an excellent opportunity to meet many employers in a central location.

Reference Library

Students can view material from the reference library in the office. The library contains employers literature, company videos, job search materials, work abroad programs, salary information, and telephone books from other cities across Canada.

Student Housing and Food Services

261 Stormont House

Residences

Telephone: 520-5612
Fax: 520-3592

The staff of the Department of Housing and Food Services strive to enhance the University experience by providing support and various services to the 1,666 students living in the residence community. This includes developing and promoting programs which respond to the academic objectives and developmental needs of residence students. The live-in Residence Life staff are active in contributing to the educational, cultural, and social growth of the students in their houses.

The residences are located on campus and close to classrooms, the library, and other University facilities. The underground tunnel system makes travel to other University buildings easy in all seasons. Each residence building is provided with T.V. lounges, study areas and laundry facilities. Students' rooms are equipped to meet the basic needs of students.

Students of the University are eligible to apply to live in residence, with first-year students with a high school leaving average of 80 percent or better being given preference. The residence contract covers the period from September through the Spring examinations, except for a short period at Christmas when the majority of the facilities are closed.

As part of the Residence fee they pay, students receive their choice of two available meal plans: Plan A which provides 14 meals per week (lunch and dinner) or Plan B which provides 12 meals per week and a cash component of \$300 to be spent at any University-operated food outlet.

To receive a residence application form, students new to Carleton should indicate on the University application that residence is desired. Residence materials and detailed information are sent to students concurrently with the offer of admission to full-time study at Carleton. There are a number of accessible rooms in residence available for students with disabilities - the minimum requirement of credits that the student must be enrolled in is the equivalent of two full credits. For further information, please see "Resident Attendant Services Program for Students with Disabilities." (See p. 27.) Students who are currently registered at Carleton need only visit the Student Housing Office to obtain an application for residence. For further details about residence services or procedures, students should contact the Department of Housing and Food Services.

Off-Campus Housing

Telephone: 520-5614

The Off-Campus Housing Service is designed to provide assistance in finding suitable accommodation to students who cannot be accommodated or are interested in off-campus housing. This service mainly operates on a self-help basis, with listings of accommodation posted outside 261 Stormont House for viewing 24 hours per day, seven days a week. During normal office hours, staff members are pleased to assist in any way with information, advice, etc. In addition, the Off Campus Centre, located in 211 Commons Building, operates from 9:00 a.m. - 4:00 p.m. during the months of July and August. Staff of the Centre provide personal assistance, and further information.

Details regarding each listing include rates and amenities provided. The University does not undertake to inspect or approve any of the facilities listed, so it is strongly advised that the search be undertaken in person. The listings can also be viewed on any terminal having access to the University mainframe by typing the word HOUSING after the "enter class" prompt appears.

In addition, a newsletter titled "Faculty and Staff Listing" is published on the 15th of every month. (Deadline for submissions is the 13th.) This lists

accommodations of staff members going on sabbatical leave for periods ranging from four months to two years. Lists are distributed to each department on campus and are available on request.

Food Services

Telephone: 520-5612

Marriott Corporation: 520-5618

Capital Foods: 520-5643

A-la-carte food service is available at nine locations on campus:

Mr. Submarine, second level, University Centre;
The Peppermill, second level, University Centre;
Hugo's, first level, University Centre;
The Loeb Cafeteria, first level, Loeb Building;
The Fit Stop, first level, Physical Recreation Centre;
The Oasis/Pizza Hut, first level, Residence Commons;
Roasters, Library precinct, Tunnel level;
Chip Wagon, seasonal;
Domino's Pizza, fourth level, University Centre.

Many vending machines are also distributed around campus for off-hour service or quick drinks and snacks.

Students may purchase a variety of meal plans permitting them to eat at any of the above locations. Traditional Board Plans or a la carte "Campus Cash" plans offer flexible, economical choices suiting most budgets. Plans may be purchased by students living on and off campus. Students use their Student ID card just like a "credit card" to use their meal plan. Some meal plans are exempt from both the provincial sales tax and the federal goods and services tax.

In addition, full catering services are available to provide a banquet, party trays, and bar service for groups of up to 600. Our "Surprise Someone" program offers a convenient means by which friends or relatives can purchase exam study treats, birthday cakes, pizza parties and the like for residence students. To arrange for catering services, telephone 520-5618.

Tour and Conference Centre

Telephone: 520-5611

Fax: 520-3952

Each year from May to August, the Housing and Food Services Department operates a successful Tour and Conference Centre. Residence facilities accommodate up to 1,400 guests. A wide range of services including accommodation, catering, meeting rooms, lecture theatres, all at very reasonable rates, are available to conferences and tour groups.

Accommodation is also available to short-term summer visitors, including students and their families, who wish to attend or participate in such University functions as Convocation and first-year student Welcome programs. Revenue generated from this operation is used to augment Residence operating income.

Arrangements for special functions such as wedding receptions, banquets, parties (large and small) and meetings or other special events are also co-ordinated by the Tour and Conference Centre. Such events may be booked throughout the year.

For further information please contact the Tour and Conference Centre.

Health Services

Suite 2600
Carleton Technology and Training Centre
Telephone: 520-6674

Health Services offers comprehensive health care for the entire community at Carleton University (students, staff and faculty). In the event of illness or other health related concerns, we have a professional staff of physicians, psychiatrists, nurses and administrators to help you. When necessary, appropriate referrals are made to Health Practitioners in the community. Confidentiality is respected at all times. Medical records will not be released without the patients' permission. The Health Services provides consultation, treatment and advice on matters of health, and ascertains the fitness of students to perform academic work.

Our hours are from 8:30 a.m. to 4:30 p.m. (May - August) and 9:00 a.m. to 5:00 p.m. (September - April). For an appointment please call 520-6674. After-hours medical services are available from Ottawa Medical Services located at 476 Holland Ave., (at Carling), phone 722-5221. When you call to book an appointment please identify yourself as a Carleton student.

Psychiatrists are available on a referral basis for those requiring psychiatric assessment or care. The services provided are available to all students of the University, and are covered by provincial health insurance.

A Health Education Program, promoting healthy lifestyles and wellness, offers on-going workshops presented by trained student peer educators. Topics include but are not limited to nutrition, alcohol, sexuality, stress management and smoking cessation. For more information, call the Health Educator at 520-6676.

Health Insurance

1. Ontario Students

Carry your health insurance number with you at all times. If you do not have one, application for coverage must be made directly with the Ministry of Health at 75 Albert Street in Ottawa.

2. Students from Another Province

If you are from outside of Ontario, check that your health insurance is active and carry your number with you at all times. We don't bill you, we bill your provincial insurance plans directly.

3. Students from Outside Canada

International students and their families are covered by Ontario's Health Insurance Plan. The University Health Insurance Plan (UHIP) is compulsory for all international students upon registration. Further information regarding UHIP may be obtained from the foreign student advisor, the International Student Centre or Carleton International.

If you do not have any health insurance, you will be billed for the services rendered. The University may

withhold the marks of students with outstanding accounts.

Immunization Record

It is recommended that new students:

1. Check with your family physician to ensure adequate immunization. An updated tuberculin skin test is recommended.
2. Obtain documentation of vaccination to red measles, German measles, mumps, polio and tetanus from your family physician. A booster dose of measles/mumps/rubella vaccine is recommended if you have not been re-immunized since infancy.
3. Discuss Hepatitis B vaccine with your family physician. The Medical Office of Health for Ottawa-Carleton region strongly recommends it for all adolescents and young adults.

Counselling and Student Life Services

501 University Centre
Telephone: 520-6600

Counselling and Student Life Services is an educational resource centre available to all members of the University community. A qualified team of counselling professionals offers the wide range of services and programs listed.

All contacts with Counselling and Student Life Services are voluntary and strictly confidential. Information is released only upon the request and with the consent of the client involved. Other types of assistance include appropriate on-and off-campus referrals when required and consultation regarding the problems of another person.

Office hours are from 9:00 a.m. to 5:00 p.m. For further information about services and programs, contact the centre in person or call 520-6600.

Counselling Services

Personal counselling can help individuals deal more effectively with emotional and social concerns. Individual and group approaches are used in providing counselling. The groups are offered periodically throughout the year. The nature and content of programs are publicized along with dates and registration details.

Career Counselling

Educational and career counselling involves learning to plan wisely, handle difficulties and make decisions with regard to academic and vocational concerns. Relevant information generated by group discussion and testing is used in helping the client to determine goals and make choices.

Resource Centre

A resource centre is available for use in educational and vocational planning. It includes occupational materials, university and community college calendars, directories and other types of career literature. Information about other sources of assistance at Carleton and in the greater Ottawa community is also avail-

able. There is a library of materials that are available on a loan system.

Study Skills Program

The Study Skills Program is designed to assist students in improving their learning skills. Learning skills include managing time, writing essays, taking tests and examinations, remembering, reading, and note-taking.

Group sessions are offered regularly and groups are kept relatively small to allow ample time for discussion and interaction. Participants have access to individual sessions if the structured group sessions do not entirely meet their needs.

Campus Life Program

The program provides direct and indirect service to students at the University. Its main goal is to assist new students in a variety of areas (e.g. academic, social, emotional) thereby easing the transition to life at Carleton University. In addition to initial activities, services and programs are offered throughout the year. The Transitions program matches new students with returning students who are there as resource people and friends. The Program is available throughout first year to assist students to achieve a social and academic balance.

International Student Advisory

The International Student Adviser is available to discuss particular concerns international students may have. An orientation program is held every August for incoming international students. Information concerning university education, financial assistance, health coverage, immigration regulations and the general adjustment to a new living situation is available. An appointment may be necessary.

Paul Menton Centre for Persons with Disabilities

Main Office
500 University Centre
Telephone: 520-6608
TDD: 520-3937
Fax: 520-3995

Satellite Office
223 Residence Commons
Telephone: 520-2600 (ext. 5590)

Director - Larry McCloskey
Co-ordinator, Learning Disabilities - Nancy McIntyre
Learning Disabilities Specialist - Diane Proulx
Co-ordinator, Physical Disability - Dean Mellway
Co-ordinator, Attendant Services - Matthew Cole

Publications

A series of brochures and flyers on resources and services available to students with disabilities at Carleton University may be obtained from the Paul Menton Centre free of charge.

Requests for Service

The Paul Menton Centre provides individualized support services to persons who are deaf or hard of hearing, with learning disabilities, visual impairments, head injuries, physical disabilities including mobility impairments, or have psychiatric or other medical disabilities.

Students are responsible for applying for special services by making an appointment. All requests will be considered on an individual needs basis. Students are advised to come to the Centre as early in the term as possible to discuss service requests.

Library Services for Students with Disabilities

The Joy MacLaren Adaptive Technology Centre, managed by the Library, is located in 232 MacOdrum Library. The Centre has been equipped with computers and other technical devices for use by students with disabilities. Written referral by the Paul Menton Centre is required for access to the Joy MacClaren Centre.

The Library's contact for transcription services is Margaret McLeod of the Reader Services Department (520-2600 ext. 2736). Students referred by the Paul Menton Centre are registered with the W. Ross MacDonald School, the provincial agency which provides texts and other course-related material in alternate formats for university students who have a print disability. The agency's preferred medium at the post-secondary level is 4 track audio tape. They do not supply readings on disk. Material may be provided in braille or large print if timelines are acceptable. It can take up to four months to produce the material, therefore request should be made as early as possible.

Students who are Blind or Visually Impaired

In the Joy MacLaren Adaptive Technology Centre in the MacOdrum Library, students who are blind or visually impaired have access to Zoomtext Plus, a Telesensory colour SVGA Close Circuit TV, the Dec-talk voice synthesizer, the Vocal-Eyes screen interface software, the Scanjet scanner and the SlimVoice speech synthesizer.

Students who are Deaf or Hard of Hearing

The Centre acts as liaison for the Educational Support Services program. The ESS program provides interpreter service, notetakers and personal FM systems for eligible part-time students. Full-time students may be eligible for services through Vocational Rehabilitation Services (VRS) or other funding agencies. It is the students responsibility to initiate early enquiries.

Students with Learning Disabilities

It is recommended that the student have a recent psychoeducational assessment available which has been administered within three years of initial registration at the Paul Menton Centre. This will allow Paul Menton Centre staff to organize services that address each individual's particular learning disability.

Students with Mobility Impairments

The campus of Carleton University is well equipped for accommodating persons with physical disabilities. The buildings are in close proximity to each other and most are connected by tunnels. All of the main buildings have elevators and are ramped for outside entrance and egress. Many sidewalks have been made accessible by curb-cut renovations. A building-by-building accessibility inventory is available from the Centre.

Students with Non-Visible Disabilities

Students with non-visible disabilities may have legitimate needs which are not easily recognized or understood within the University community. Students with psychiatric, medical or other non-visible disabilities are encouraged to contact the Paul Menton Centre to discuss personal or academic issues of concern to them.

Residence Attendant Services Program for Students with Disabilities

The Residence Attendant Services Program offers 24 hour assistance with activities of daily living such as personal care, room chores, cafeteria assistance, etc. The program is available to students with various levels of disability and attempts to respond to individuals according to their specific needs. In order to provide comprehensive services only a limited number of program spaces are available free of charge by contacting the Attendant Services Co-ordinator at 520-6615.

For students who need an accessible room in residence but do not require attendant services, a limited number of rooms are available based on the following criteria: the need for special accommodation, level of disability, whether the applicant has housing alternatives in the area, and the date of application. For further information contact the Accommodations Officer in the Department of Housing and Food Services at 520-5612.

Writing Tutorial Service

The Writing Tutorial Service offers individual and small group tutorials to students who want advice on the writing of university essays. The tutors provide practical instruction on all aspects of the writing process from the initial research and data-gathering, to the exploration and organization of ideas, through to the final preparation of the manuscript. In addition, the service regularly presents workshops on style and the general principles of essay writing at the request of Faculty and/or Teaching Assistants. The service is offered free of charge to all Carleton students, part-time and full-time, graduate and undergraduate. For an appointment or information, call 520-6632 or visit 215 Paterson Hall from 9:00 a.m. to 4:00 p.m., Monday to Friday.

Bookstore

The University Bookstore, located in Southam Hall, stocks required textbooks and offers a wide variety of reference and general books. A complete line of school supplies, imprinted software and gifts is also available.

Bookstore hours are (from Labour Day to April 30):
Monday through Thursday, 9:00 a.m. to 9:00 p.m.
Friday 9:00 a.m. to 4:30 p.m.

Hours are subject to change and will be posted at the Bookstore entrance.

Extended and summer hours are posted at the Bookstore entrance.

The Bookstore has a limited refund and exchange policy at the opening of each term and students are urged to review the policy posted in the Bookstore before buying their texts. *The Bookstore sales receipt is required for any refund or exchange.*

Computer Store

Telephone: 520-3699

The Computer Store, located in Southam Hall, carries a full range of computer products, (including Apple, IBM, Packard Bell, and Compaq computers, printers, modems, software and other peripherals) at very competitive prices, for students, faculty and staff.

Store hours:

Monday to Thursday

9:00 a.m. - 5:00 p.m.

Friday 9:00 a.m. - 4:30 p.m.

Closed weekends and statutory holidays.

Summer hours are posted at the entrance.

University Centre

The University Centre (Unicentre) is a non-academic, student-oriented building which serves as the hub of the campus. It is home to the Carleton University Students' Association and virtually all of its operations (i.e. coffeehouse, pub, convenience store, pharmacy, video arcade). Its location and atmosphere makes it the perfect meeting place and an ideal setting for events of interest to all students.

In addition to housing CUSA services, the Unicentre is home to: Health Services, Counselling and Student Life Services, Information Carleton, Ombuds Services, the Graduate Students' Association, a division of the Ontario Public Information Research Group, and the Paul Menton Centre. Porter Hall, which is available for both on- and off-campus groups to rent, is also located within the Unicentre.

For a more complete list of the services available, please see the section entitled Carleton University Students' Association. (See p. 29.)

Ombuds Services

511 University Centre
Telephone: 520-6617

Jim Kennelly
University Ombuds

Ombuds Services deals with a variety of grievances and complaints as well as with requests for information. A few examples of the on-campus and off-campus problems include academic appeals, graduation appeals, fee disputes and human rights issues. Financing of this service is provided equally by the University and the Students' Association (CUSA).

Computing and Communications Services

401 Robertson Hall
Telephone: 520-3700

A wide range of computer services are available to students. There are several Sun systems running Unix, as well as a number of microcomputer networks. All students are eligible for accounts on the CHAT system, an electronic communication system for e-mail, course discussion groups and Internet access. Also, all students have access to word processing spreadsheet and database software as well as laser printing facilities and CD-ROM services at the microcomputer labs on campus. Student Consultants are available at the microcomputer labs during peak times.

Comprehensive data analysis packages such as SAS, SPSS, Maple, Mathematica and Matlab are available for general research applications. Complete information about computing on campus is available to all students through the campus-wide information gopher see <http://www.carleton.ca/CCS>.

For information or assistance, please visit the CCS Help Desk in 401 Robertson Hall or call 520-3700. Handouts on various computing topics are available for pick up.

The Chaplaincy

Protestant-Ecumenical Chaplaincy
T28, T30 Tory Tunnel
Telephone: 520-4449
Chaplain, Neil Hunter

Roman Catholic Chaplaincy
127G University Centre
Telephone: 520-2896 or 520-2590
Chaplain, Father Don Maclellan
Assistant Chaplain, Deacon Derek G. Smith

For over three decades a chaplaincy service has existed at Carleton. Part of its function is to share experiences, insights, friendships and our faith. We are also involved in study and discussion groups, community projects, development education, marriage preparation and religious services. In addition, we have connections with many organizations and

resources on campus as well as with churches and religious groups in the Ottawa area.

The two principal chaplains (Protestant-Ecumenical and Roman Catholic) are supported by a number of people in the Chaplaincy offices, which are open most days. Appointments are not necessary but at times they are advisable. People are encouraged to visit the offices at any time.

Next to the offices in the Tory Tunnel there is a Quiet Room, which is used for individual meditation, religious services (times posted), and prayer group activity. It is open all day, five days a week. Roman Catholic Mass is celebrated every Sunday at 4:30 p.m. in 100 St. Patrick's Building and daily Tuesday to Thursday at 4:30 p.m. in the quiet room. Check with the Chaplaincy office regarding special services.

Colonel By Child-Care Centre

Telephone: 520-2715

The Colonel By Child Care Centre is located on the campus. Children are accepted between the ages of six months and five years. Priority admission is given to the children of students, staff and faculty members. The program is developmentally suited to the individual needs of three age groups - infants, toddlers, and preschoolers. The staff are trained in Early Childhood Education. Parents form the Centre's Board of Directors, responsible for policy decisions.

The Centre is open twelve months a year with the exception of statutory holidays. Operating hours are Monday to Friday from 8:00 a.m. to 5:45 p.m. A hot lunch and two nutritious snacks are provided daily.

Fees are prepaid on a monthly basis. Fee subsidies are available from the Regional Municipality of Ottawa-Carleton for families who meet the qualifications. As the waiting list for admission is extensive, parents are encouraged to apply as early as possible.

For information, please call the Centre.

Status of Women

2201 Dunton Tower
Telephone: 520-5622
Fax: 520-4037

9:00 a.m. to 4:00 p.m. (Evening appointments are available)

Co-ordinator
Nancy Adamson

Human Rights Educator
Jane Keeler

The University established the position of Status of Women Co-ordinator to facilitate structural changes to address women's issues.

The Co-ordinator identifies priority issues of various groups of women on campus and lobbies for changes that will improve their status. Some of these are childcare, sexual harassment, personal and campus safety, date rape and sexual assault, racism, lack of

accessibility, sexism, employment and educational equity, and chilly climate. The Co-ordinator also offers confidential counselling, information and referral to individual students, staff and faculty to resolve specific issues.

The Human Rights Educator also facilitates workshops on sexual harassment, sexism in general or other human rights issues.

Carleton University Students' Association

401 University Centre
Telephone: 788-6688
Fax: 788-3704

The Carleton University Students' Association (CUSA) is an incorporated student-run organization that promotes the interests of the student body. All registered undergraduate full- and part-time students are members of CUSA.

The legislative body of CUSA is a 34-member Students' Council made up of representatives from each faculty and a President and Finance Commissioner who are elected annually by the student population. Elections take place in February. The term of office is for 12 months commencing the following May.

CUSA represents the students' interests to all levels of government and administration. It is also a member of the Canadian and Ontario Federations of Students-organizations committed to bringing about necessary educational, administrative or legislative changes in those areas affecting students.

Student services funded or operated by CUSA include: Careers Programming, Carleton Disability Awareness Centre, Carleton Foot Patrol, CKCU-FM Radio Carleton, The Charlatan (student newspaper), Gay, Lesbian and Bisexual Centre, International Students' Centre, Mature and Part-time Students' Centre, Off-Campus Students' Centre, Peer Counselling Centre, Photo Centre, Student Academic Action Bureau, Womens' Centre, and the Volunteer Bureau.

CUSA business ventures include: a Copy Shop, Games Room and Arcade, Oliver's (pub), Rooster's Coffeehouse, Unicentre Store and Unicentre Pharmacy.

CUSA also sponsors an assortment of clubs and societies, alternate education programs, speaker series, and concerts.

The Students' Association is continually working to improve and expand its scope of activities. Please feel free to make your ideas and opinions known to your elected representatives.

510 Robertson Hall
Telephone: 520-3636
Fax: 520-3587

The Carleton University Alumni Association represents the 60,000-plus graduates of Carleton University. Membership is automatically extended to all graduates, and is available, upon request, to former students who have completed five full credits but are no longer registered at Carleton.

The objectives of the Association are to advance the excellence and prestige of Carleton University as a distinguished institution of higher learning in Canada, and to encourage a spirit of loyalty, friendship, service and benevolence among the members.

The Alumni Association serves the University by promoting its well-being through contact with the graduates, the government, the public, the faculty, students and potential students. It is governed by the National Alumni Council, a volunteer group comprised of branches and chapters representatives and committee chairs.

All graduates with known addresses receive the quarterly *Carleton University Magazine*. The Department of Development and Alumni Services maintains alumni records to assure a meaningful and continuing dialogue between alumni and the University.

The Alumni Association sponsors reunions and an alumni award program, and assists branches and chapters to organize various activities. The Association offers services to alumni including life insurance, an affinity MasterCard, a long-distance savings program, and automobile and household insurance.

Funds from alumni help to support the library, student aid and other specific projects.

Members of the Alumni Council for 1995-96:

Gail M. Larose, BAHons/69, MA/70, (President)
Michael Makin, BJ/86, (Vice-President)
Don B. Climo, BA/51, BCom/52, (Past-President)
Tom Anzai, BCom/84
Paul Brown, BA/89
Gerard Buss, BA/73
Lori Chiarelli, BA/93
Paul Correy, BEng/74
Liz Czanyo, BAHons/88
Angela Davis, BCom/91
Derek DeLeon, BA/94
Christine Fisher, BAHons/75, MA/77
Mark Giberson, BJ/84
Fiona Gilfillan, BAHons/80
Norine Gilkinson, BA/78
Maxine Grier, MA/91
Tracy Hall, BA/87
Jennifer Higgins-Ingham, BA/89, BAHons/92
Mark Horton, BA/93
Sherri Kashuba, BCom/87
Michelle Landreville, BA/84
Michael Lanos, BA/86
Dave Loney, BA/79
Alan MacArtney, BA/84
Maria McClintock, BA/86
Tomas Oliva, BA/85
Patrick O'Reilly, BCom/92
Pamela Pavliik, BJ/80
Stewart Ross, BCom/78
Phil Rourke, MA/89
Dave Thomson, BCS/86, MCS/93
Lee Tunstall, MA/91

315 Robertson Hall
Telephone: 520-3663

General Admission Requirements

Persons wishing to follow programs of study leading to a degree or certificate diploma must be formally admitted to the University.

Persons wishing to register in degree-credit courses without having been formally admitted to the University may do so as Special students. (See p. 63.)

Minimum entrance requirements vary from program to program. Applicants should note that meeting the minimum requirements of a program does not guarantee them admission to the University. Applications from students whose grades do not meet the requirements in a given year or program will be considered individually. Students in this category may be asked to provide additional information to assist the University in determining where there are special circumstances that would permit their admission to Carleton.

This publication contains admission requirements for the 1996-97 academic year only. Students wishing to apply for 1997-98 should contact the Office of Admissions and Academic Records for information on requirements and procedures.

Individuals who are in any doubt about their eligibility for admission are encouraged to enquire at the Office of Admissions and Academic Records.

Accessibility for the Disabled

Carleton University is committed to making reasonable accommodation to individuals with disabilities, and actively encourages application from disabled students. This commitment includes gaining an understanding of the circumstances of an individual's disabilities and to adjusting services to all academically qualified individuals to compete on an equitable basis.

Our applications process assures confidentiality insofar as the admission decision is concerned, while identifying the candidate to the Office of the Co-ordinator for the Disabled so that those who gain admission can make the decision to come to Carleton after assessing the extent to which specialized services will be available.

Academic accessibility is intrinsically linked to physical accessibility. Carleton is committed to continually monitoring and upgrading physical accessibility to whatever extent is possible.

A standing Committee of Senate monitors the needs and problems of disabled students in conjunction with their academic problems and makes recommendation for improvements.

(See Student Services, Facilities for Students with Disabilities, p. 26.)

Multiple Undergraduate Programs

Students who already possess an undergraduate degree, certificate, or diploma from another university or from Carleton University, may apply for admission

to a second undergraduate program. In such circumstances, the minimum requirement will be 5.0 additional credits, at least 3.0 of which must be in the area of specialization of the new program. For a second or subsequent undergraduate program, the appropriate residence requirement must be met. (See p. 49.)

English Language Requirements

1. In order to be eligible for unconditional admission to a degree program at Carleton University, all foreign applicants and Canadian citizens and residents whose first language is not English or French are required to:

(a) present a minimum score of 580 on the *Test of English as a Foreign Language* (TOEFL); or

(b) present transcripts to indicate that they have studied for the last four years in a Canadian secondary school in which the language of instruction is English.

2. Students whose first language is French must present transcripts to indicate that they have taken four years of Anglais in a Canadian secondary school in order to be admitted unconditionally.

3. Foreign applicants and Canadian citizens and residents who do not meet the requirements in 1 or 2 above are required to take an approved assessment of English as a Second Language administered by the University's Centre for Applied Language Studies (CALS). Depending on the results of this assessment, and based on the recommendations of CALS, these applicants may be:

(a) admitted to a degree program without further English language requirements; or

(b) admitted to a degree program and permitted to register for a program of full- or part-time studies that includes one or more credit courses in English as a Second Language concurrent with these courses during the first terms of study; or

(c) granted conditional admission requiring the satisfactory completion of pre-credit intensive courses in English and/or credit courses in English as a Second Language, concurrent with a limited number of courses in their field before being admitted to a degree program; (upon the recommendation of CALS, overseas students whose TOEFL score is less than 580 may be granted conditional admission before they arrive in Canada. All applicants granted conditional admission must complete an assessment at the Centre before being permitted to register at Carleton. Students will not be permitted to retain the status of conditional admission for longer than one Fall/Winter session and one Summer session without the approval of CALS.); or

(d) permitted to register as Special students on the condition that they enrol concurrently in an appropriate English as a Second Language course; or

(e) permitted to register in non-credit English as a Second Language courses offered by CALS.

For further information regarding English language requirements and admission, contact the Office of Admissions and Academic Records.

Dates of Entry

Students may be admitted to register in January, May and July as well as in September. (See p. 10 for details on the Academic Year.) It should be noted

however, that a full range of courses is only offered during the Fall/Winter session, i.e. September to May.

Levels of Entry

Students may be admitted to Qualifying-University, First or upper years depending upon academic qualification. When a student is admitted at the Qualifying-University year level, a Pass degree program is normally four years in length (i.e. Qualifying-University, First, Second, Third) and an Honours degree program is normally five years in length (i.e. Qualifying-University, First, Second, Third, Fourth). When a student is admitted at the First-year level, the degree program is normally three years for a Pass degree and four years for an Honours degree. Beyond First year, remaining degree requirements are determined by the total number of credits required for that particular degree program less those credits granted on transfer from previous post-secondary studies.

It should be noted that students who are being considered for admission to the Qualifying-University year level may, at the time of admission, receive credit for work completed at that level in the Canadian high school system.

Concurrent Studies

The Concurrent Studies program enables Secondary School students to begin University-level study while completing any outstanding requirements for their high school diploma. The availability of the Concurrent Studies program will be of particular interest to those students in semestered schools who are not taking a full load of high school credits in their final year of study. Students in non-semestered high schools may also wish to take advantage of this opportunity in their final year if they are not taking a full credit load.

Students who wish to take advantage of the Concurrent Studies program will register as Special students. Special students are permitted to take up to 2.0 approved First-year credits in the Fall/Winter Session and 2.0 approved First-year credits in the Summer Session. With admission to a degree program, program requirements for a degree will be reduced by the number of credits successfully completed as part of the Concurrent Studies program that are appropriate to the degree. Other universities normally grant credit on admission for courses taken at Carleton as a Special student.

Accelerated Progress

Exceptional students who are entering Carleton's Qualifying-University year will be interested in the accelerated progress policy. This unique policy is designed to enable very capable students to proceed towards a degree at a rate commensurate with their ability in university work.

Above-average performance is rewarded with a reduction in credit requirements. For example, in an Arts or Science program, the maximum reduction possible under this policy could result in a student obtaining a degree in three years beyond Grade 12. Detailed requirements are shown in the Calendar entries for faculties.

Qualifying-University Year

This program is offered in the Bachelor of Arts, the Bachelor of Engineering and the Bachelor of Science programs. Students interested in other undergraduate degree programs must first complete an appropriate Qualifying-University year program in Arts, Engineering or Science. (See Summary beginning on p. 40.)

Certificate Programs

In addition to offering thirteen undergraduate degree programs, for which the admission requirements are stated on the following pages, Carleton offers six certificate programs, as follows:

Certificate in English Language and Composition

Admission Requirements

A university degree or teaching certificate. This is an in-service certificate intended primarily for practising teachers, in order to upgrade their knowledge of those areas of language and of writing theory that underlie the Ontario guidelines and support documents.

Refer to p. 255 for program details.

Certificate in Public Service Studies

Admission Requirements

The basic admission requirement is the completion of the OSSD including six OAC's, or the equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations (see Mature and Special Admissions, p. 36).

Candidates may be admitted with advanced standing, but must complete at least 4.0 credits, including all core courses, for the Certificate at Carleton University. Students who have completed an undergraduate degree are not eligible for admission to this program.

Refer to p. 467 for program details.

Certificate in the Teaching of English as a Second Language

Admission Requirements

Applicants are admitted on the recommendation of the Department of Linguistics and Applied Language Studies. Applicants have normally completed a first degree in another discipline, or a course of study in a teacher training college or university. Others with a strong academic background or with experience in the teaching of English as a second language may be admitted with permission of the Department.

Refer to p. 374 for program details.

Certificate in Law Enforcement Studies

Admission Requirements

The basic admission requirement is the completion of the OSSD including six OAC's, or the equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations (see Mature and Special Students Admissions, p. 36).

Candidates may be admitted with advanced standing, but must complete at least 4.0 credits, including all core courses, for the Certificate at Carleton University.

Refer to p. 371 for program details.

Certificate in French Language Studies

Admission Requirements

The basic admission requirement is the completion of the OSSD including six OAC's, or the equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations (see Mature and Special Admissions, p. 36).

Candidates are required to take French Placement before entry into the program. Depending on the results of the French Placement procedure, candidates may be required to complete one or more prerequisite French courses before taking any required certificate courses.

Refer to p. 273 for program details.

Certificate in French Translation Studies

The basic admission requirement is the completion of the OSSD including six OAC's, or the equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations (see Mature and Special Students Admissions, p. 36).

Candidates are required to take French Placement before entry into the program. Depending on the results of the French Placement procedure, candidates may be required to complete one or more prerequisite French courses before taking any required certificate courses.

Refer to p. 273 for program details.

High School Applicants

Ontario

The basic admission requirement is the completion of the OSSD, including six OACs, or the equivalent. The overall average and mix of OACs required is dependent upon the degree or program for which the student is applying. Students who have attained this basic requirement will be considered for admission to First year.

Detailed admission requirements for each undergraduate degree program can be found in chart form starting on p. 40.

Carleton University utilizes, for admission purposes, the credit system as defined by the Ministry of Education and Training of Ontario. In calculating averages, the weighting factor assigned to a subject will be directly proportional to the credit value of that subject.

Quebec

Students from the Province of Quebec may apply for admission to Carleton University either upon completion of the Secondary V Certificate or after completing

work towards the Collegial Diploma. (See Quebec CEGEPs, p. 35.)

Students applying on the basis of high school studies will be considered for admission to the Qualifying-University year as follows:

General Statement

The Quebec Secondary V Certificate, with a 75 percent average or better and including six college preparatory subjects at the Secondary V level.

Individual Degree Program Requirements

Bachelor of Arts

Secondary V work to include two of: English; a language other than English; mathematics (functions).

Bachelor of Engineering

Secondary V work to include: mathematics (functions); chemistry; physics.

Bachelor of Science

Secondary V work to include: mathematics (functions); two natural sciences (chemistry and physics).

Students who have completed a Grade 12 program will be considered for admission to First year.

Other Canadian Provinces

Applicants to degree programs at Carleton must normally be admissible to a university in their own province.

From the Canadian provinces and territories whose pre-university studies culminate in 12 years of schooling, graduates are considered for direct admission into First year. At the present time, graduates from high schools in the following provinces are considered for admission. The overall average required is dependent upon the degree or program for which the students are applying.

Alberta and the Northwest Territories
British Columbia and The Yukon
Manitoba
New Brunswick
Newfoundland
Nova Scotia
Prince Edward Island
Saskatchewan

It is recognized that the curriculum of some provinces does not include an introductory course in calculus, or that a final-year mathematics course may have only a few weeks of an introduction to calculus, or that only a few schools in a particular province or territory may offer a calculus course to a selected group of students. In instances where no calculus is presented, and there is a requirement for it in the University program to which the student is admitted, adjustments may have to be made to include Mathematics 69.007★ (Introductory Calculus) as an extra half credit beyond the normal degree program requirements.

It should be noted that for some restricted-enrolment programs, preference may be given to applicants who, along with a high academic standing, have completed an introductory course in calculus.

The United States

1. Applicants who have completed Grade 12 in the United States or in a U.S. overseas school will be considered for admission to First year. The Grade 12 program must include at least four academic units, and a minimum of 16 academic units must have been completed in Grades 9 to 12.

2. An average of B- or better is required for Pass programs and A for Honours programs. The applicants must be ranked in the first quarter of their class.

3. Applicants must also present a score of 550 or better on the S.A.T. Verbal and a score of 550 or better on the S.A.T. Mathematics, (or a composite score of 1100) of the Scholastic Aptitude and Achievement Tests of the College Entrance Examination Board (C.E.E.B.).

Three achievement tests are required from applicants to the Faculties of Science and Engineering and to the School of Industrial Design, these being: Mathematics and two of Biology, Chemistry or Physics for Science; Mathematics, Chemistry and Physics for Engineering and Industrial Design. The score of 550 or better in each or a composite score of 1650 is required.

Two achievement tests are required for applicants to the Schools of Architecture and Computer Science (Hardware area of specialization). These are: Mathematics and Physics. The score of 550 or better in each or a composite score of 1100 is required.

4. Applicants failing to meet the foregoing requirements but with otherwise a good academic record may be considered for admission to an appropriate Qualifying-University year program.

Other High School Systems

Applicants who have completed high school diploma requirements in other than Canadian or American high school systems will be considered for admission at the appropriate level of entry. Individuals from foreign systems of education will be considered for admission to Qualifying-University year only if they are able to present sufficient evidence that their secondary school background is appropriate to this level of entry with respect to academic content and level of achievement.

Generally speaking, such applicants must meet requirements for admission to a university in their own country.

The following certificates may be accepted to meet admission requirements to the Qualifying-University year:

United Kingdom, West Indies, East and West Africa, Hong Kong: The General Certificate of Education (or equivalent) with satisfactory standing in five subjects at the Ordinary Level (or equivalent), at one sitting or, the General Certificate of Secondary Education (U.K.) with satisfactory standing in five courses.

Note:

Students who achieve at a high level may qualify for a possible reduction in degree requirements. (See Accelerated Progress, p. 32.)

The following certificates may be accepted to meet admission requirements to First year:

United Kingdom, West Indies, East and West Africa, Hong Kong: The General Certificate of Education (or the equivalent) with satisfactory standing in five subjects at Ordinary Level (or equivalent) and two suitable subjects at Advanced Level, the latter completed at one sitting.

International: The International Baccalaureate.

Special Requirements for Overseas Students

Translation of Documents

The University must be in receipt of all official documents by July 1. Applicants from non-English speaking countries must arrange to submit certified English translations of their academic documents.

Financial Information

The University has no scholarships or financial assistance plans available for incoming foreign students at the undergraduate level.

Transfers from Post-Secondary Institutions

Residence Requirement

In order to qualify for a Bachelor's degree, or a certificate from Carleton University, an undergraduate student must complete at Carleton University at least the equivalent of the final year of that degree program, or at least 4.0 credits for any certificate. (See p. 49.)

When a faculty of the University further specifies "core" level, and detailed departmental requirements, such as Design Project or Honours Thesis, these must also be fulfilled.

Universities

1. Carleton University subscribes to the following General Policy on the Transfer of Course Credits, as adopted by the Council of Ontario Universities:

Acceptance of transfer credits among Ontario universities shall be based on the recognition that, while learning experiences may differ in a variety of ways, their substance may be essentially equivalent in terms of their content and rigour. Insofar as possible, acceptance of transfer should allow for the maximum recognition of previous learning experience in university-level courses.

Subject to degree, grade and program requirements, any course offered for credit by one university shall be accepted for credit by another Ontario university when there is an essential equivalency in course content.

Please contact Carleton's Office of Admissions and Academic Records for information about transferring specific courses.

2. Students applying from other recognized universities may be admitted with advanced standing if they are eligible to continue at the institution from which they wish to transfer.

An applicant who is attending or has attended institutions of post-secondary education must present:

(a) *Official Certified Transcripts* of academic records mailed directly to this University by the registrars of the institutions attended;

(b) In addition, applicants who have taken only one year of study past the secondary school level may be required to submit an official transcript of high school marks mailed directly to Carleton University by the high school concerned.

Credit may be received for courses taken at other recognized degree-granting institutions if:

(i) courses are relevant to a student's proposed program; and

(ii) the appropriate department recommends that such courses be credited to a student's program. Each application will be evaluated on its own merits.

Students who apply for admission to an undergraduate degree program who already possess an undergraduate degree from either Carleton or another university, are required to complete a minimum of one year's academic work at Carleton University as specified by the department in which the degree is to be taken in order to qualify for another undergraduate degree. (See Multiple Undergraduate Programs, p. 31.)

Provisional Admission

Some transfer applicants (those who have attended only one Canadian university or Quebec CEGEP and have demonstrated better than average academic achievement) will automatically be considered for provisional admission. The provisional approval will be given prior to the completion of the student's current year, and will provide a detailed statement of the credits to be granted upon transfer. Admission will be confirmed upon presentation of a final transcript that indicates the successful completion of all courses with suitable standing.

Ontario Colleges of Applied Arts and Technology (CAATs)

Students from Ontario Colleges of Applied Arts and Technology who present a minimum Second-Class Honours standing will be considered for admission to the University and may receive advanced standing to a maximum of the equivalence of First year. Assessments regarding admission and advanced standing will be based on the following guidelines:

1. Applicants who have achieved an overall Second-Class standing or better, or who have Second-Class standing or better in the last two semesters in a three-year CAAT program, will be considered for admission with advanced standing to a maximum of five credits (equivalent to one year). The advanced standing will be granted according to the appropriateness of the CAAT program, the course concentration and the achievement in relevant courses.

2. Applicants who have achieved an overall Second-Class standing or better, or who have Second-Class standing or better in the last two semesters of a two-year program, will be considered for admission. While such applicants will not normally receive advanced standing, exceptional applicants can receive

advanced standing on the recommendation of the appropriate academic department(s).

3. Applicants who have completed two years of a three-year program and who have achieved an overall Second-Class standing or better, or who have Second-Class standing or better in the last two semesters, will be considered for admission. While such applicants will not normally receive advanced standing, exceptional applicants can receive advanced standing on the recommendation of the appropriate academic department(s).

4. Applicants who have completed the first year of a three-year CAAT program with an overall First-Class standing will be considered for admission to First year of an appropriate University program.

5. Graduates of a two-year or a three-year CAAT program or applicants who have completed two years of a three-year CAAT program who do not meet the minimum published requirements but who are presenting *Third-Class standing* may receive special consideration on an individual basis.

Other students presenting an incomplete program normally will not be considered for admission to Carleton University on the basis of that program. Such persons may enquire about possible alternatives if they are desirous of seeking admission to a Carleton University degree program at some future date.

Quebec CEGEPs

Admission Requirements

1. A CEGEP applicant who has completed successfully 12 "General" or pre-university courses will be considered for admission to First year, without advanced standing. The overall average required is dependent upon the degree or program for which the student is applying.

2. CEGEP applicants who have successfully completed more than 12 "General" or pre-university courses will be considered for admission with advanced standing based on the number of courses in excess of 12 and not to exceed the equivalent in credits of the First year of the program to which they are admitted. The overall average required is dependent upon the degree or program for which the student is applying.

3. CEGEP applicants from a three year program who have successfully completed more than 12 "General" or pre-university courses will be considered for admission to First year. The overall average required is dependent upon the degree or program for which the student is applying. They may receive advanced standing for courses taken in addition to these 12 provided they correspond to those in the program to which they were admitted. The number of advanced standing credits will not exceed those of First year.

All applicants should note that failures in their CEGEP studies can adversely affect their admissibility.

Subject Requirements

Although specific subject requirements have been kept to a minimum, the following are considered necessary prerequisites for the degree program indicated:

Bachelor of Architecture: mathematics; physics.

Bachelor of Arts: none specified.

Bachelor of Commerce: mathematics.

Bachelor of Computer Science: mathematics; physics required for the Hardware option, recommended for all others.

Bachelor of Engineering: mathematics; physics; chemistry.

Bachelor of Humanities: none specified

Bachelor of Industrial Design: mathematics; physics; chemistry.

Bachelor of International Business: mathematics.

Bachelor of Journalism: none specified.

Bachelor of Music: none specified.

Bachelor of Public Administration: none specified.

Bachelor of Science: mathematics; two experimental sciences.

Bachelor of Social Work: none specified

Mature and Special Students Admissions

Mature Applicants

Mature Applicants are persons who satisfy all of the following requirements;

1. are 21 years of age, or over, by December 31 of the year in which they wish to enrol, and
2. are Canadian citizens or permanent residents of Canada, and
3. do not meet the normal admission requirements as published in this calendar, and
4. have been away from full-time studies for a minimum of two calendar years, and
5. have not attended a university or college as full-time students.

Applicants who meet the definition of Mature Applicant will be considered for admission to full-time or part-time studies. They can apply for admission to a Pass degree program in the Faculties of Arts, Science, or Social Sciences, or to a degree program in Engineering, Architecture, Computer Science, Industrial Design, or Social Work.

These applicants are required to submit proof of age, biographical information and a transcript of their most recent studies.

Admission to the Faculty of Arts, or to the Faculty of Social Sciences

Mature Applicants will normally be admitted to the First year of a Pass degree program in the Faculties of Arts or Social Sciences, or the First year of the undergraduate degree program in Social Work if they have:

- (a) secondary school graduation in an academic program (the overall average required is dependent upon the degree or program for which the student is applying); or
- (b) completed, as a Special student at Carleton University, one appropriate full credit (or two half credits) with C- or better standing in the first attempt (or in

both of the first two half-credit course attempts); or
(c) other academic or work experience which, in the opinion of the admissions committee, indicates a likelihood of success at university.

Mature Applicants are not usually considered for admission to Honours programs in Arts or in Social Sciences and to the programs in Business, Journalism, Music or Public Administration. If, however, at the end of their First year in another degree program, they meet the requirements for one of the above mentioned programs, they can apply to transfer to that program.

Admission to the Schools of Architecture, Computer Science, and Industrial Design

Mature Applicants can be considered for admission to the First year in the Schools of Architecture, Computer Science, or Industrial Design if they have the prerequisite subjects for the program to which they wish to apply and if they have:

- (a) secondary school graduation in an academic program with a 60 percent average; or
- (b) completed, as a *Special student* at Carleton University, one appropriate full credit (or two half credits) with C- or better standing in the first attempt (or in both of the first two half credit attempts); or
- (c) other academic or work experience which, in the opinion of the admissions committee, indicates a likelihood of success at university.

The prerequisite subjects (OAC's or equivalents) for Architecture, Computer Science, and for Industrial Design are found under *Prerequisite Subjects* at the end of this section.

Persons applying for admission to these undergraduate degree programs without the necessary prerequisites, will not normally be considered until the prerequisite subjects have been successfully completed. All applications are reviewed on an individual basis.

Admission to the Faculty of Engineering

Mature Applicants can be considered for admission to First year of a degree program in the Faculty of Engineering if they have the prerequisite subjects for the program and if they have;

- (a) secondary school graduation in an academic program with an average of 70 percent or better;
- (b) completed, as a *Special student* at Carleton University, one appropriate full-credit (or two half-credits) with a C- or better standing in the first attempt (or in both of the first two half-credit attempts); or;
- (c) other academic or work experience which in the opinion of the admissions committee, indicates a likelihood of success at university.

The prerequisites subjects (OACs or equivalent) for Engineering are found under *Prerequisite Subjects* at the end of this section. A grade of 60 percent or better is required in each prerequisite subject.

Persons applying for admission to this undergraduate degree program without the necessary prerequisites will not normally be considered until the prerequisite subjects have been successfully completed. All applications are reviewed on an individual basis.

Admission to the Faculty of Science

Mature Applicants can be considered for admission to the First year of a Major program in the Faculty of Science if they have the prerequisite subjects for the program *and* if they have:

- (a) secondary school graduation in an academic program with an average of 70 percent or better;
- (b) completed, as a *Special student* at Carleton University, one appropriate full-credit (or two half-credits) with a C- or better standing in the first attempt (or in both of the first two half-credit attempts); or;
- (c) other academic or work experience which in the opinion of the admissions committee, indicates a likelihood of success at university.

The prerequisite subjects (OACs or equivalent) for Science are found under *Prerequisite Subjects* at the end of this section.

Persons applying for admission to this undergraduate degree program without the necessary prerequisites will not normally be considered until the prerequisite subjects have been successfully completed. All applications are reviewed on an individual basis.

Mature Applicants are not usually considered for admission to Honours programs in Science. If, however, at the end of the First year of a Major program, they meet the requirements for one of the Honours programs, they can apply to transfer to that program.

Special Students Wishing to Apply as Mature Applicants

Special students who meet all of the criteria for Mature Applicants, can be considered for admission as Mature Applicants: if

- (a) they have completed, as a *Special student*, at Carleton University, one appropriate full credit (or two half credits) with a C- or better standing, in the first attempt (or in both of the first two half credit attempts); and
- (b) they are eligible to continue as Special students at Carleton University; and
- (c) they have completed any additional degree program prerequisite subjects which may be required for a particular program.

Mature Applicants, who as Special students at Carleton University, have not obtained a grade of C- or better in one full credit (or two half credits), in the first attempt (or in both of the first two half credit attempts), can attempt to qualify for subsequent admission through additional courses as a Special student at the University.

Individuals seeking admission under the Mature Applicant status who need further information should inquire at the Office of Admissions and Academic Records or the School of Continuing Education.

Special Students

Admission to a Degree Program as a Special Student

Special students may be admitted to a degree program if their academic achievement at Carleton University indicates a reasonable probability of future academic success. Previous post-secondary studies

at other institutions will also be taken into consideration at the time the application for admission is evaluated. Students with previous, unsuccessful post-secondary studies are encouraged to contact the Office of Admissions and Academic Records or the School of Continuing Education before attempting to qualify for admission on the basis of studies as a Special student.

Normally, in the Faculty of Arts and the Faculty of Social Sciences, a Special student can be considered for admission to a Pass degree program after successfully completing at least 4.0 credits (or the equivalent), out of the first six attempts with a CI of 4.00 or better. Every grade which appears on the official transcript constitutes an attempt. Attempts are weighted according to the credit value of the course. See *Attempts*, section 5.5, p. 78. The CI is calculated by dividing the total number of grade points accumulated over all attempts by the total number of attempts. See *Continuation Index*, section 5.4, p. 78. Provided that there have been no unsuccessful attempts, students who perform at a higher level can gain admission after fewer credits, i.e. after successful completion of:

- 2.0 full credits (or the equivalent) with a CI of 10.00 or better, or
- 2.5 full credits (or the equivalent) with a CI of 8.50 or better, or
- 3.0 full credits (or the equivalent) with a CI of 7.00 or better, or
- 3.5 full credits (or the equivalent) with a CI of 5.50 or better.

Normally, in the Faculty of Science, a Special student can be considered for admission to a Major program after passing at least 4.0 *approved* full credits (or the equivalent) with a C- standing or better in at least 2.0 full credits (or equivalent). Students seeking admission to the Faculty of Science who do not have the necessary prerequisite subjects are usually not considered for admission until the necessary prerequisites have been successfully completed in addition to the four *approved* credits (or the equivalent). The prerequisite subjects (OAC's or equivalents) are found at the end of this section under *Prerequisite Subjects*. An average of 70 percent or better is required in the prerequisite subjects. The grade offered in OAC Calculus must be 60 percent or better, and no more than one of the remaining two prerequisite subjects may be offered with a grade below 60 percent.

Special students wishing to apply for admission must meet the requirements within the previous six full credits (or the equivalent) and cannot present more than two supplemental or grade-raising examinations in meeting the requirements for admission.

Special students who meet the age requirement for Mature Applicants can normally be considered for admission on this basis only if they meet all admission requirements for Mature Applicants.

Special students wishing to apply for admission to the Faculty of Engineering, or the Schools of Architecture, Business, Computer Science, Industrial Design, Journalism, or Social Work, are urged to consult with the Office of Admissions and Academic Records or the School of Continuing Education.

Prerequisite Subjects

In programs such as Architecture, Computer Science, Engineering, Industrial Design and Science, students must have completed mathematics and science courses at least at the OAC level before being considered for admission. These are called "prerequisite subjects". The specific OAC's (or the equivalent) are listed by program.

Architecture

Calculus
Algebra/Geometry
Physics

Computer Science

Calculus
Algebra/Geometry
Physics, for the Hardware option see p. 41

Engineering

Calculus
Algebra/Geometry
Chemistry
Physics

Industrial Design

Calculus
Algebra/Geometry
Chemistry
Physics

For all of the above programs a grade of 60 percent or better is required in each subject.

Science

Calculus and two of:
Algebra/Geometry
Biology
Chemistry
Physics

An average of 70 percent or better is required in the prerequisite subjects. The grade offered in OAC Calculus must be 60 percent or better, and no more than one of the remaining two prerequisite subjects may be offered with a grade below 60 percent.

Previous Carleton Students

All former students who have been formally admitted to a degree or certificate program at the undergraduate level, and who are seeking readmission either to that program or to another program, are governed by differing regulations, depending upon the faculty or school that offers the program.

Please refer to the relevant program section of this Calendar or, if there is no specific entry dealing with readmission in that section, consult the appropriate Faculty Registrarial Services office to determine whether or not it is necessary to submit a new application for admission.

Admission Procedures

How to Apply

Prospective students, when requesting an application directly from the University, should provide a complete outline of their academic background.

1. The following applicants must apply through the Ontario Universities' Application Centre (OUAC):

(a) Current Ontario high school students should obtain a preprinted application form from their high school and arrange to have it submitted to the Application Centre.

(b) Overseas applicants must obtain a copy of the OUAC 105F application form designed for them. The Application Centre's address is 650 Woodlawn Road West P.O. Box 1328, Guelph, Ontario, Canada. N1H 7P4.

(c) Other applicants should obtain a common application form from the Office of Admissions and Academic Records, Carleton University, and submit this completed form to the Application Centre.

2. All applicants are required to reveal all previous secondary and post-secondary studies (whether they were successfully completed or not) when completing the application for admission.

3. When more than one application choice is directed to Carleton, only the first choice is initially processed. In the event that admission cannot be approved for this program, the applicant will automatically be considered for other choices.

4. Previous Carleton University students do not apply through the Application Centre unless they also wish to be considered for admission to another Ontario university. If they wish to apply solely to Carleton, they request a Carleton application form from the Office of Admissions and Academic Records and submit the completed form directly to that office. If they wish to apply to another Ontario university as well as to Carleton, they should, in addition, request a common application form (OUAC 105), complete and mail it with the application fee to the Centre. Carleton should not be included as a choice on the OUAC 105 form.

Application Deadlines

The following are application dates for the 1996-97 admission year:

February 1: Applicants to the School of Architecture and the School of Social Work.

March 1: Applicants to the Bachelor of Music and the Bachelor of Humanities degree programs.

April 1: Applicants whose documents originate outside Canada or the United States.

May 1: Applicants to the School of Journalism and Communication.

June 1: All applicants whose documents originate in Canada or the United States, except applicants to the School of Architecture, the School of Journalism and Communication, Music or the School of Social Work.

June 30: Students registered in a degree program at Carleton University applying for a transfer to another degree program.

Note:

Applications for admission may be received after these dates, but the University cannot guarantee that all late applications will be processed in time for registration in the academic session requested. Applicants to programs with limited enrolment should note that such programs may be filled by this date.

Documents

Documents submitted in support of an application for admission become the property of the University. In some cases, original documents (for example, General Certificate of Education) may be returned to the applicant.

The University may nullify an admission and revoke a registration if it finds that an applicant for admission or registration has, in the process, provided false or incomplete information.

Applicants who are unable to submit documents of previous academic studies as a result of natural disaster, armed conflict, or the securing of refugee status are subject to the following policy:

1. Applicants who are unable to submit supporting documents will not be admitted. They will be encouraged to register as Special students and qualify for admission by taking courses at the University.

2. Applicants who can submit official transcripts but cannot submit course descriptions will be admitted to First year if:

- (i) their academic record meets the standards required by the program for which they are applying;
- (ii) their high school studies include prerequisite subjects for admission to First year.

3. Applications from candidates who can provide course descriptions based on their recollection of the courses which they have taken will be treated according to the same procedures as those which apply to applicants who cannot submit course descriptions (see 2. above).

Early Admission

Offers of early admission will be based on the previous year final and current year interim marks.

For Ontario high school applicants, the earliest date by which offers of admission can be received by

candidates for the 1996 admissions cycle is June 12. The onus is on each student who does not receive an offer of early admission to supply official final marks to the Office of Admissions and Academic Records.

Out-of-province applicants will receive an offer of admission as soon as interim marks are received by the University and the assessment is completed.

Applicants to a restricted enrolment program should note that their acceptance to an offer of admission must be *received* by the Office of Admissions and Academic Records within two weeks from the date the offer was made.

Carleton reserves the right to withdraw offers of admission for failure to complete the school year satisfactorily. In addition, applicants are advised that although they may receive an offer of admission based on interim marks, final marks, when they are received, will become part of the University's admission record.

Deferred Admission

Applicants who are unable to register for the academic year to which they were admitted, or who wish to postpone their studies for one year, can request a deferred admission. This request must be made in writing and submitted to the Office of Admissions and Academic Records no later than September 15 of the year during which they were admitted. Applicants must state the reason(s) for requesting a deferred admission.

Applicants who have been granted a deferred admission will receive before their registration, an updated Statement of Standing which will reflect any changes in their program requirements that may have occurred in the intervening time because of changes in programs and/or regulations.

A deferred admission is usually not granted for programs where enrolment is very limited. Students who have been admitted to these programs and wish to postpone their studies for one year should contact the Office of Admissions and Academic Records to have their application for admission deferred until the next admission cycle. At that time their application will be studied with those of other applicants to the program.

Applicants who have been granted a deferred admission and who register at another post-secondary institution will have their admission withdrawn and will have to submit a new application for admission.

Summary of Undergraduate Degree Programs

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Architecture

Degree

B. Arch.

Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in Architecture, students must complete this level of study in high school or by registering in either Qualifying-University year Science or Engineering in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Science or for Qualifying-University year Engineering as stated elsewhere in this chart.

Admission Requirements, First Year

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs, three of which must be Calculus, Algebra and Geometry, and Physics; or the successful completion of Qualifying-University year with an appropriate course pattern.

Note: Supporting documentation must include a biographical letter, graphic exercise and a portfolio.

Admission requirements are for the 1996-97 year only, and are based on the Ontario High School system. Holding the minimum admission requirements only establishes eligibility for consideration.

Arts

Degrees

B.A.

B.A. (Honours)

Admission Requirements, Qualifying-University Year

The OSSD. A 75 percent average must be presented on a minimum of ten Advanced credits in Grades 11 and 12, including two of: English, a language other than English or Mathematics, at the Grade 12 level.

Ontario applicants with two or three OACs may be granted advanced standing for one or two Qualifying-University year credits if the mark in each OAC considered for advanced standing is 75 percent or better, and providing that these OACs are not used to meet the minimum OSSD requirements.

Admission Requirements, First Year

The OSSD or the equivalent, with an average of 60 percent or better, including six OACs; or the successful completion of Qualifying-University year.

For Honours: The OSSD including six OACs, with an average of 65 percent or better.

The cut-off point for admission will be set annually, and the cut-off point will normally be above the minimum requirement. Applicants falling below the cut-off point will be considered on an individual basis to determine whether there are special circumstances that would permit their admission.

For any B.A. program offered by the Department of Mathematics and Statistics, an OAC in Calculus (or equivalent) with a grade of 60 percent or better is required; alternatively, Mathematics 69.007★ with a grade of C- or better is required. In addition, an OAC in Algebra and Geometry (or the equivalent) or Mathematics 69.017★ is also required. Mathematics 69.017★ may be counted for credit only as a free elective.

For the B.A. program in Biology, an OAC in Chemistry is required, and an OAC in Calculus and OAC in Algebra/Geometry or the equivalent (Mathematics 69.017★ and 69.007★) are recommended.

Students intending to major in Canadian Studies should present an OAC in French.

For a major in Economics, an OAC in Calculus and one in either Algebra and Geometry or in Finite Mathematics are recommended. Students lacking these courses should take Mathematics 69.017★ and 69.007★. These will be counted as credits towards a degree in Economics but may not count for a B.A. Pass or Honours (or Combined Pass or Honours) in Mathematics and Statistics. For all programs, although it is not an admission requirement, an OAC in English is recommended

Commerce

Degree

B.Com. (Honours)

Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in Commerce, students must complete this level of study either in high school or by registering in Qualifying-University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

Admission Requirements, First Year

The OSSD or the equivalent, with an average of 65 percent or better, including at least six OACs, one of which must be Calculus and one must be either Algebra and Geometry or Finite Mathematics.

A grade of 60 percent or better is required in Calculus.

Although it is not an admission requirement, an OAC in English is recommended.

Computer Science

Degree

B.C.S. (Honours)

Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in Computer Science, students must complete this level of study in high school or by registering in an appropriate course pattern in Qualifying-University year Arts, Science or Engineering.

Admission Requirements, First Year

The OSSD or the equivalent, including six OACs, two of which must be a Calculus OAC and an Algebra and Geometry OAC. An overall average of 65 percent or better is required along with an average of 65 percent or better in Calculus and in Algebra and Geometry;

or the successful completion of Qualifying-University year with a GPA of 5.0 or better and including Mathematics 69.007★ and 69.017★ also with a GPA of 5.0 or better.

For the Hardware option only, an OAC in Physics (or the equivalent) is required.

Engineering

Degree

B. Eng.

Admission Requirements, Qualifying-University Year

The OSSD. A 75 percent average must be presented on a minimum of ten Advanced credits at Grades 11 and 12 including an appropriate preparation in Chemistry, Physics and Grade 12 Mathematics.

Ontario applicants with two or three OACs may be granted advanced standing for one or two Qualifying-University year credits if the mark in each OAC considered for advanced standing is 75 percent or better, and providing that these OACs are not used to meet the minimum OSSD requirements.

Admission Requirements, First Year

The OSSD or the equivalent, including at least six OACs with an overall average of 70 percent or better. The six OACs must include Calculus, Algebra and Geometry, Chemistry and Physics, with an average of 70 percent or better; or the successful completion of Qualifying-University year with an appropriate course pattern. Although it is not an admission requirement, at least one OAC in either English or Français is recommended.

Humanities

Degree

B.Hum. (Honours)

Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in Humanities, students must complete this level of study either in high school or by registering in Qualifying-University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those of Qualifying-University year Arts as stated elsewhere in this chart.

Admission Requirements, First Year

The OSSD or the equivalent, with an average of 80 percent or better, including 6 OACs; or the successful completion of Qualifying-University year with an appropriate course pattern and the required average.

Note: Prospective students must submit a portfolio consisting of **a)** a one-page statement of why they wish to enter the program, **b)** a 750-word essay based on reflections on the theme or book chosen each year by the College, and **c)** a sample of a marked written exercise. The portfolio should be submitted to the College of Humanities, Carleton University, by April 1.

Industrial Design

Degree

B.I.D.

9875
9810
1266

Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in Industrial Design, students must complete this level of study in high school or by registering in either Qualifying-University year Science or Engineering in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Science or for Qualifying-University year Engineering as stated elsewhere in this chart.

Admission Requirements, First Year

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs, which must include Physics, Chemistry, Algebra and Geometry, and Calculus; or the successful completion of Qualifying-University year with an appropriate course pattern.

Although it is not an admission requirement, an OAC in English is strongly recommended.

Note: It is strongly recommended that candidates present a portfolio of any kind of work that could demonstrate creativity and aptitude for the study of industrial design. Candidates are normally expected to make arrangements for a personal interview at the school.

International Business

Degree

B.I.B. (Honours)

Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in International Business, students must complete this level of study either in high school or by registering in Qualifying-University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

Admission Requirements, First Year

The OSSD or the equivalent, with an average of 65 percent or better, including at least six OACs, one of which must be either Calculus or Algebra/Geometry or Finite Mathematics. A grade of 60 percent or better is required in the mathematics course offered. If Finite Mathematics is offered, the student must also have successfully completed Grade 12 Advanced Mathematics.

Although it is not an admission requirement, an OAC in English is strongly recommended.

Journalism

Degree

B.J. (Honours)

Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in Journalism, students must complete this level of study either in high school or by registering in Qualifying-University year Arts in an appropriate course pattern. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

Admission Requirements, First Year

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs or the successful completion of Qualifying-University year.

Although it is not an admission requirement, an OAC in English is recommended.

Music

Degree

B.Mus. (Honours)

Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in Music, students must complete this level of study either in high school or by registering in Qualifying-University year Arts. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

Admission Requirements, First Year

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs; or the successful completion of Qualifying-University year.

Although it is not an admission requirement, an OAC in English is recommended.

Public Administration

Degree

B.P.A. (Honours)

Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in Public Administration, students must complete this level of study either in high school or by registering in Qualifying-University year Arts. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

Admission Requirements, First Year

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs; or the successful completion of Qualifying-University year.

Although it is not an admission requirement, an OAC in English is recommended.

Science

Degrees

B.Sc.

B.Sc. (Honours)

Admission Requirements, Qualifying-University Year

The OSSD. A 75 percent average must be presented on a minimum of ten Advanced credits at Grades 11 and 12, including an appropriate preparation in Chemistry, Physics and Grade 12 Mathematics.

Ontario applicants with two or three OACs may be granted advanced standing for one or two Qualifying-University year credits if the mark in each OAC considered for advanced standing is 75 percent or better, and providing that these OACs are not used to meet the minimum OSSD requirements.

Admission Requirements, First Year
Major Program

The OSSD or the equivalent, with an average of 70 percent or better, including six OACs, including a core consisting of one OAC in Calculus and at least two OACs chosen from Algebra and Geometry, Biology, Chemistry, and Physics. In addition, an average of 70 percent or better is required in the core OACs.

A grade of 60 percent or better is required in Calculus and not more than one of the two remaining core courses may have a grade below 60 percent.

Admission to any major program offered by the Department of Mathematics and Statistics requires an OAC in Algebra and Geometry (or the equivalent); students lacking an OAC in Algebra and Geometry (or the equivalent) must successfully complete Mathematics 69.017★ as a free elective, before taking a 100-level Algebra course.

Honours Program

The OSSD or the equivalent, with an average of 75 percent or better, including six OACs, including a core consisting of one OAC in Calculus and at least two OACs chosen from Algebra and Geometry, Biology, Chemistry, and Physics. In addition, an average of 75 percent or better is required in the core OACs.

A grade of 60 percent or better is required in Calculus and not more than one of the two remaining core courses may have a grade below 60 percent.

Admission to any Honours program offered by the Department of mathematics and Statistics requires an OAC in Algebra and Geometry (or the equivalent); students lacking an OAC in Algebra and Geometry (or the equivalent) must successfully complete Mathematics 69.017★ as a free elective, before taking a 100-level Algebra course.

For Honours in Psychology, an OAC in English is recommended.

Social Work

Degree

B.S.W. (Honours)

Admission Requirements, Qualifying-University Year

As there is no Qualifying-University year in Social Work, students must complete this level of study in high school or by registering in Qualifying-University year Arts. Hence, the admission requirements at this level are those for Qualifying-University year Arts as stated elsewhere in this chart.

Applicants should also refer to the notes appearing in the Admission requirements for First year.

Admission Requirements, First Year

The OSSD or the equivalent, with an average of 65 percent or better, including six OACs; or the successful completion of Qualifying-University year.

Although it is not an admission requirement, an OAC in English is strongly recommended.

Preference will be given to applicants with human service work experience which may be met by employment and/or volunteer experience. Each applicant will be requested to complete a personal data information document which will assist in the evaluation of their suitability for the program.

Requirements

In order for students to register for an academic session the following requirements must be met:

- a) new students must be formally admitted to a degree or certificate program OR have completed the required application for Special student studies;
- b) returning students must be academically eligible to continue in their program;
- c) there must be no outstanding account with the university;
- d) International students must be enrolled in or have received permission for exemption from the University Health Insurance Plan (UHIP).

Detailed instructions regarding registration and course offerings for the Fall/Winter Session will automatically be mailed to newly admitted and returning students. Information regarding Summer Session is normally available in Faculty Registrarial Services offices by March 1.

Regulations

Students are normally governed by the regulations contained in the Calendar that is in effect at their first registration, unless it is expressly stated otherwise. Students may choose, however, to complete their studies under new regulations that are introduced, if they meet the requirements of these new regulations.

Course Selection

All course selection and course change activity (adds, drops, withdrawals, change of section) is normally carried out using the university's Touchtone Telephone Voice Response Registration System. Course selection must be completed according to the requirements of the faculty or school and major departments in which the student is registering. Students planning to undertake professional training beyond their undergraduate studies should ensure that their programs meet the requirements for admission to, or registration with, their intended post-graduate program.

Auditing Courses

Students may register to audit courses (i.e. attend without receiving credit) in addition to those course being taken for credit. Although audited courses receive no academic credit they are counted as part of the total course load for both academic and fee assessment purposes. Access to courses for purposes of auditing is determined by demand for credit space in such courses. Some courses are not available for audit purposes. The deadline to change a course enrolment from credit to audit or audit to credit is the last day for course changes.

Cross-Listed Courses

Some courses in the calendar appear under the course offerings of more than one department. These are referred to as cross-listed courses. Students planning to enrol in such a course are advised to consult with their academic advisor, in advance of registration, to ensure that the course number under which they will be enrolling is appropriate to their program. Changes in the department designation of a cross-listed course in which a student has registered cannot be made after the last day for course changes in the term or session.

Payment of Fees

Registration is not complete until fee payment arrangements have been finalized with the University Business Office.

Deregistration

The University may cancel a registration in the following circumstances: if it is determined that an applicant for admission has, in the process, provided false or incomplete information; if fee payment arrangements for a session are not completed according to registration requirements.

Challenge for Credit

Challenge for Credit is a Carleton University policy that enables students to gain undergraduate academic credit for their own learning and experience outside the University.

Challenge for Credit is available only to students formally admitted to and registered in a program leading to a Degree or Certificate.

This policy gives the student the opportunity to be examined on, and receive credit for, a recognized Carleton course without meeting the normal requirements of registration, attendance, and instruction. Students wishing to Challenge for Credit should enquire at their Registrarial Services office, with documentation to support the challenge. If the academic department, after an interview, is satisfied that the student has adequate experience and learning related to the course in question, it sets an appropriate examination. If the student is successful in the examination, the course is credited to his or her academic record.

Not all courses offered at the University are open to Challenge for Credit. Students interested in obtaining more information should contact their Faculty Registrarial Services office.

(See also *Fees*, p. 59).

Transfer of Credit for Courses Completed at Other Universities

1. Prior to Admission

At the time a student is considered for admission, credit may be granted for individual courses successfully completed at other recognized, degree-granting institutions, if:

- (a) the individual courses are relevant to a student's proposed program; and
- (b) the appropriate academic department recommends such action.

Each application is evaluated on its own merits. (See also p. 34.)

2. Subsequent to Admission

(a) Letter of Permission

Students who have been formally admitted to a degree or certificate program may take courses at other universities on Letters of Permission and have the credits transferred to their Carleton programs, provided they obtain formal approval prior to commencing each course.

(b) University of Ottawa Exchange Agreement

Undergraduate students may register to take courses at the University of Ottawa to be credited to their Carleton program. The following regulations apply:

- (i) Students must be registered in a degree program; must have completed the requirements for the First Year of their program; and must be in good standing.
- (ii) Only courses to be credited as part of the degree requirements at Carleton may be taken under the terms of the exchange.
- (iii) At any time the cumulative total of courses taken at Carleton and counting towards the degree must be greater than the total number of courses taken and/or proposed to be taken at the University of Ottawa.
- (iv) Courses taken under the Exchange Agreement shall not count towards Residence Requirements at Carleton.

Applications and information about deadlines and registration procedures are available in all Registrarial Services offices. Students should note that space in courses may be limited and therefore applications should be filed well in advance of registration.

(c) Canadian Exchange Programs

Students may be eligible to participate in inter-regional exchanges through the Canadian University Student Exchange Consortium (CUSEC). This program permits students to spend a term or an academic year at a Canadian university in another region. For further information, students should contact their Faculty Registrarial Services office.

(d) International Exchange Agreements

Undergraduate students may be eligible to take advantage of other exchange agreements with universities throughout the world. For details on these exchanges students should consult with their Registrarial Services office and the Office of Carleton International (1506 Borman Tower) at least a year in advance of the intended exchange.

Course Changes

Changes of course (including changes of status from credit to audit or audit to credit) or changes of section within a course must be made by the date contained in the Academic Year. (See p. 10.)

Degree Program Changes

Students wishing to change faculty or school (Internal Degree transfers) must make application through the Office of Admissions and Academic Records. The deadlines for such changes for the Fall/Winter Session are:

Fall Term: June 30

Winter Term: December 1

Changes in Pass-Honours: Major(s): Program Options

Students wishing to change majors or program options or to change between Pass and Honours, must apply for such changes through their Registrarial Services office. Such applications must be made according to deadlines specified by the Registrarial Services office.

Withdrawal

The responsibility for taking all steps necessary for withdrawal from an individual course, from several courses, or from all courses resides with the student. Ceasing to attend classes, or informing an instructor of intent to withdraw **does not** constitute withdrawal. Students who are withdrawing must notify their appropriate Registrarial Services Office. Withdrawal is normally done by using the Touchtone Voice Response Registration system. The official date of withdrawal is the date on which the student completes the necessary withdrawal action on the touchtone system.

Students must withdraw from courses on or before the appropriate last date for withdrawal as indicated in the Academic Year. (See p. 10.) It is not possible to withdraw from a course or courses or from the University after the appropriate designated last date for withdrawal.

Withdrawal activity may affect a student's academic standing as prescribed by regulations governing their program. Students are advised to consult their Registrarial Services office for information and guidance. A student who withdraws from a course retains no academic credit for any part of that course.

Fee adjustments for students who are withdrawing from a course, courses, or entirely from the University will be calculated as of the date of the official notification of withdrawal. For clarification of the financial effect of withdrawal on fees see p. 60.

Residence Requirement

In order to qualify for a Degree from Carleton University, a student must complete a minimum number of credits at Carleton University. For the specific number and type of credits required, refer to the appropriate faculty section of this Calendar.

To obtain an undergraduate Certificate from Carleton University, students must present a minimum of 4.0 credits taken at Carleton, including all core courses.

Student Records Information

Names

As the University is committed to the integrity of its student records, students are required to provide either on application for admission or on personal data forms required for registration, their complete, legal name. Any requests to change a name, by means of alteration, deletion, substitution or addition, must be accompanied by appropriate supporting documentation. Upon making application for graduation, students may be asked to provide proof of their name.

Addresses

Incorrect address information will delay the receipt of awards, examination results and notification of changes in academic status. Students must notify their Registrarial Services office immediately of any change in:

- (a) permanent or home address (used for registration information);
- (b) local address (used for all mail during the academic session);
- (c) telephone number for permanent address and for local address.

General

The Senate may at any time require a student to withdraw from the University if his or her conduct, attendance, work or progress is deemed unsatisfactory.

Evaluation

To obtain credit in a course, students must meet all the course requirements for attendance, term work and examinations. Before the last date for course changes, instructors will inform their classes, in writing, of all the elements that will contribute to the final grade, and the weighting of each. In all undergraduate courses with written final examinations, instructors shall also inform their classes, in writing, that supplemental examinations are available to all undergraduate students who have been awarded a grade of *F*, and that grade-raising examinations are available to all students who have been awarded a grade of *D-* or better; students will also be informed, in writing, of the method of computing the final grade revised by such examinations. In some Faculties, other conditions permitting the writing of such examinations are also defined.

Standing in Courses

Standing in courses will be determined by departments. Standing in courses will be shown by alphabetical grades. The system of grades used, with corresponding grade points, is as follows:

A+	12	B+	9
A	11	B	8
A-	10	B-	7
C+	6	D+	3
C	5	D	2
C-	4	D-	1

Grade points indicated above are for courses of one credit in value. Where the course credit is greater or less than one credit, the grade points are adjusted proportionately.

The following percentage equivalents apply to all final grades at Carleton.

A+	90-100	B+	77-79
A	85- 89	B	73-76
A-	80- 84	B-	70-72
C+	67- 69	D+	57-59
C	63- 66	D	53-56
C-	60- 62	D-	50-52

Other notations are as follows:

Aeg

Pass standing granted under special circumstances. Aegrotat standing is granted only by a faculty committee, in response to a student's application. (See Deferred Final Examinations, p. 51.)

Aud

Indicates course is not being taken for academic credit.

F

Failure. No academic credit.

FNS

Failure without access to supplementals because of incomplete term work or unacceptably low standing. No academic credit.

Abs

Absent from final examination. No supplementals. No academic credit. *Abs* is usually equated to failure.

Wdn

Withdrawn in good standing. No academic credit.

Def

Indicates deferral of final grade has been approved by a faculty committee. (See Deferred Final Examinations, p. 51.)

IP

In Progress.

Ch

Credit granted under challenge for credit policy.

Sat

Satisfactory.

Uns

Unsatisfactory.

Academic Standing

The conditions under which undergraduate students may be promoted, or placed on or relieved of probation, are shown in the Calendar entries for the Faculties and schools.

Program Year

Progress through degree studies is normally measured in terms of program years. The program year represents the accumulation of the number of credits normally taken in a Fall/Winter session of full-time study in the program in question. In addition, in some jurisdictions, program year implies the accumulation of a certain pattern of credits.

Examination Regulations

Students writing tests and examinations should be aware of the rules governing examination conduct, which are printed on the back cover of official examination booklets.

It may be necessary to schedule mid-year and final examinations during the day for classes held in the evening and vice versa.

All tests and examinations, except laboratory examinations, oral and slide tests and other particular tests, are subject to the following rules:

1. Tests or examinations given in class may not exceed the time allotted for the class.
2. Final examinations in the Summer session will be held in official examination periods.
3. In courses numbered below the 200-level, mid-year and final examinations will be held in the official examination periods.
4. In courses numbered below the 400-level, no tests or examinations may be held during the last two weeks of the Fall or Winter term of the Fall/Winter Session, between the end of the Winter term and the beginning of formally scheduled examinations, or in the last two weeks of classes of the Summer session.
5. In courses below the 400-level, take-home examinations may not be assigned before the last day of classes and are due on the last day of the official examination period.
6. In courses at the 400-level, arrangements for unscheduled examinations are at the instructor's discretion but must be announced at least three weeks before the examinations.

Deferred Final Examinations

Students who are unable to write a final examination because of illness or other circumstances beyond their control, or whose performance on the examination has been impaired by such circumstances, may, on application, be granted permission to write a deferred final examination. Such applications must:

1. be made in writing to the appropriate Registrarial Services office within a week after the original final examination (students in the Faculties of Arts and Social Sciences see p. 80); and
2. be fully supported in cases of illness by a medical certificate or by appropriate documents in other cases.

Aegrotat standing may be considered for applicants for deferred finals but will be granted only if term work has been of high quality. A student granted aegrotat standing may apply to write a deferred final examination. Deferred final examinations are written at the time of the supplemental examinations for the session concerned.

(See also Note a)

Supplemental Examinations

Supplemental examinations are available in all undergraduate courses with written final examinations. Undergraduate and Special students may, on application, write supplemental examinations in courses graded *F*, under conditions defined by the faculties. Supplemental examinations in Graduate-level courses are not permitted.

Supplementals must be written at the next supplemental examination period.

Students may apply to write supplemental examinations outside of Ottawa.

For applications and information, students should contact their Registrarial Services office.

Deadlines for submitting an application to write a supplemental examination are specified in the Academic Year. (See p. 10.)

Beginning in September 1997, a Senate-approved change in regulations will mean that supplemental examinations are no longer generally available to students. This change in regulation will affect all students after September 1997, whatever their date of first registration.

(See also Note a)

Grade-Raising Examinations

Grade-raising examinations are available in all undergraduate courses with written final examinations. However, students enrolled in the Bachelor of Engineering program are not eligible to write grade-raising examinations. All other undergraduate and Special students may, on application, write grade-raising examinations in courses already passed, under conditions defined by the faculties. Grade-raising examinations in Graduate-level courses are not permitted.

The grade awarded subsequent to a grade-raising examination supersedes the original final grade. However, both the original grade and the grade obtained from the grade-raising examination appear on the student's record. A grade-raising examination in a course can be written only once, and at the next scheduled supplemental examination period.

Deadlines for submitting an application to write a grade-raising examination are specified in the Academic Year. (See p. 10.)

Beginning in September 1997, a Senate-approved change in regulations will mean that grade-raising examinations are no longer generally available to students. This change in regulation will affect all students after September 1997, whatever their date of first registration.

(See also Note a)

Notes

(a) In the following half-credit courses in Mathematics and Statistics and Physics, where the course is offered in two successive terms, the Supplemental/Grade-Raising/Deferred Final Examination for the first course will be taken as the second course Final Examination, except where such a delay might delay graduation in the Fall:

Mathematics 69.007★, 69.017★, 69.107★, 69.109★, 69.117★, 69.119★, 69.207★, 69.208★, 69.217★, 69.257★, and 69.259★, Physics 75.101★, 75.102★.

The Supplemental/Grade Raiser/Deferred Exam for 75.101★ is the Final Exam for the next scheduled course. The deadline for application for rewriting the Winter Term Final Exam is June 15, since the Final Exam in the Summer course is written at the end of June.

(b) In courses offered by the Faculty of Engineering, Supplemental Examinations in Fall term courses at the First, Second and Third-year levels are scheduled for the August Supplemental period; Supplemental Examinations in Fall term courses at the Fourth-year level are scheduled by the Faculty of Engineering Registrar's Office for the month of May.

Review of Grades

Students are entitled to a review of a final grade. Those wishing to receive such a review should enquire at their Registrarial Services office, after which they may wish to make a formal application for this review. Applications must be filed according to the application deadlines for each term (See p. 10.)

Note:

The review may lower the grade.

Requests for review are dealt with by the departmental chair in consultation with members of the department.

The charge for each review is refundable if the grade is raised. Students awaiting the outcome of a review must still apply for any supplemental examination by the prescribed deadline. (See p. 59.)

Release of Grades

With the commencement of each Final examination period students may hear their grades by calling the Touchtone Voice Response Registration system at 564-4455 and entering their student number and personal access code.

Students may obtain a copy of their official transcript by completing a "Request for Academic Transcript" form which is available from 315 Robertson Hall. Transcripts required for professional and graduate schools should be ordered well in advance of any deadline set by these institutions.

Final grades, including official transcripts, are **not** released by the University to students with outstanding accounts. (See Delinquent Accounts, p. 61.)

Graduation Requirements

In order for students to receive their degree, they must fulfil:

1. all the requirements of the department(s), school or institute in which they are taking the degree;
2. all faculty regulations;
3. all University regulations;
4. all financial obligations to the University.

The student is responsible for meeting graduation requirements. Acceptance of a registration does not grant exemption from any regulation.

Students who wish to be considered for graduation must apply at their Registrarial Services office by the following deadlines:

February 1 - Spring Graduation (June)
September 1 - Fall Graduation (November)
December 1 - Winter Graduation (February)

Records Retention Policy

Since 1990 the University has implemented a records retention policy which provides for the destruction of student file folders and their contents after a period of 10 years has elapsed since the last registration. This policy applies to those students who are formally admitted and registered in degree programs. Further information on this policy can be obtained by contacting the Office of Admissions and Academic Records.

Instructional Offences

The Senate of the University has enacted the following regulations for instructional offences:

Any student commits an instructional offence who:

1. cheats on an examination, test, or graded assignment by obtaining or producing an answer by deceit, fraud or trickery, or by some act contrary to the rules of the examination;
 2. submits substantially the same piece of work to two or more courses without the prior written permission of the instructors from all courses involved. Minor modifications and amendments, such as changes of phraseology in an essay or paper, do not constitute a significant and acceptable reworking of an assignment;
 3. contravenes the regulations published at an examination or which are displayed on the reverse side of a properly authorized examination booklet;
 4. commits an act of plagiarism (which for the purpose of this regulation shall mean to use and pass off as one's own idea or product work of another without expressly giving credit to another);
 5. disrupts a class or other period of instruction if he or she:
 - (a) is a registered member of the class or period of instruction;
 - (b) is warned to discontinue any act or behaviour reasonably judged by the instructor of the course or period of instruction to be detrimental to the class, and having ignored such warning is ordered by the instructor to leave and refuses to leave.
 6. Any student found in violation of these regulations may be:
 - (a) expelled;
 - (b) suspended from all studies at the University;
 - (c) suspended from full-time studies;
- and/or

- (d) awarded a reprimand;
- (e) refused permission to continue or to register in a specific degree program but subject to having met all academic requirements shall be permitted to register and continue in some other program;
- (f) placed on academic probation;
- (g) awarded an *FNS*, a *Fail*, or *Abs* in a course or examination.

Allegations of instructional offence may be investigated by instructors and/or departmental chairs and, in all cases, will be reported to the faculty Dean. The Dean will promptly advise, in writing, the student and the University Ombudsperson of the allegation and of the student's rights. The Dean will review the allegation and, if not resolved at that level, the allegation becomes subject to final disposition by a tribunal appointed by the Senate. Information about procedure governing tribunals is available from the Clerk of Senate, 607 Robertson Hall.

Offences of Conduct

The University has in place regulations and procedures to deal with allegations of misconduct made against students in the areas of discrimination and sexual harassment.

Discrimination:

The University has enacted the following regulation:

Any student commits a general offence who commits an act of discrimination on the basis of race, ancestry, place of origin, colour, ethnic origin, national origin, creed, sex, age, marital status, family status, political affiliation or belief, sexual orientation, or any handicap that is defined as such in the Human Rights Code of Ontario.

The University has also approved the following procedures for enforcement of this regulation:

1. An allegation shall be made in writing to the Dean of the Faculty in which the program to which the respondent has been admitted belongs or, in the circumstances where the respondent has not been admitted to a program, to the Dean of the Faculty where the majority of courses in which the respondent has registered are administered. An allegation against a student in residence when made by another student in residence which involves the complainant's enjoyment of her/his accommodation shall be made to the Vice-President (Academic). The Dean, or the Vice-President (Academic), as the case may be, shall cause to have an investigation conducted and, upon receipt of the report of the investigation, shall either 1) dismiss the allegation on the grounds of insufficient evidence or lack of jurisdiction by the University, or 2) accept that the allegation is founded and seek the agreement of the respondent to a remedy, or 3) refer the matter to the President. A Dean's dismissal of the allegation may be appealed, within ten working days, to the Vice-President (Academic) who may, in turn, either

1. again dismiss the allegation, or 2) accept that the allegation is founded and propose a remedy to the respondent, or 3) refer the matter to the President.

In the case of students in residence, where the original allegation has been made to the Vice-President (Academic) and is dismissed, appeal shall be directly to the President who may either 1) again dismiss the allegation, or 2) accept that the allegation is founded and propose a remedy to the respondent, or 3) refer the matter to a tribunal appointed by the Senate.

2. In the instance where the matter has been referred to the President, the latter shall decide whether or not the University shall conduct a hearing before a tribunal appointed by the Senate.

If the allegation is proven, the tribunal shall decide upon one of the following sanctions:

The student may be:

- a) expelled;
- b) suspended for a period of time from all studies at the University;
- c) restricted in his/her use of University facilities; and/or
- d) given a reprimand.

Should the President decide not to conduct a hearing before a tribunal, the allegation shall be deemed to have been dismissed, but the President shall give written reasons for such a decision, and these reasons shall be communicated to the parties involved.

3. In the instance where the complainant wants redress from the University without the involvement of the respondent, or where the respondent is unknown or is not a member of the University community, and/or where there is a claim that the University has failed or has been negligent in providing a safe, non-hostile environment, the allegation of an offence shall be made in writing to the President, who shall cause an investigation to be conducted. Upon receipt of the report of the investigation, the President may order any relief he/she deems fit, and shall give written reasons for the decision; which reasons shall be communicated to the complainant.

Information about procedure governing tribunals is available from the Clerk of Senate, 607 Robertson Hall.

Sexual Harassment:

The University has approved a Sexual Harassment Policy which defines sexual harassment as follows:

1. Sexual harassment may occur irrespective of gender and is:

- a) unwanted attention of a sexually oriented nature, made by a person who knows or ought reasonably to know that such attention is unwanted; and/or
- b) an implied or expressed promise of reward for complying with or submitting to a sexually oriented request or advance; and/or
- c) an implied or expressed threat of reprisal for not complying with or submitting to a sexually oriented request or advance.

Sexual harassment may include, but may not be limited to, behaviour such as:

- unwarranted touching;
- suggestive remarks or other verbal abuse in a sexual context;

- leering;
- compromising invitations;
- demands for sexual favours;
- sexual assault.

2. Sexual harassment may also be: engaging in a course of sexual comment or conduct that is known or ought reasonably to be known to be unwelcome. This form of sexual harassment may affect individuals or groups. It may take the form of excluding an individual or a group from rights and/or privileges to which they are otherwise entitled.

3. Sexual harassment may be psychological, verbal or physical and may be all of these. It is behaviour prohibited by the University for all persons and circumstances over which the University has jurisdiction. In some of its forms it may contravene the Human Rights Code of Ontario. Sexual assault is a crime pursuant to the Criminal Code.

4. Regulations governing the conduct of students and employees of the University are applied to those times and places at which the actions of such employees and students relate to or impinge upon their function as such.

The University's Sexual Harassment Policy provides for advisory and mediation services to assist in resolving perceived situations of sexual harassment before they reach the level of formal allegation. Attention is drawn, in this regard, to the role of the University's Advisers on Sexual Harassment complaints. These advisers may be contacted at 520-5622, the Office of the Co-ordinator, Equity Services.

The University has enacted regulations under which allegations of General Offence (Sexual harassment) may be made against students. These regulations state that a student commits a general offence who engages in conduct which constitutes sexual harassment as defined in the University's Sexual Harassment Policy.

The University has also approved procedures for the handling of allegations of general offence (sexual harassment) against a student. These procedures, as well as the sanctions which a tribunal can impose, are the same as those outlined above for acts of discrimination, save and except that the investigators charged with the investigation which the Dean, the Vice-President (Academic), or the President, as the case may be, shall cause to have conducted, must be selected from the Panel of Investigators provided for under the terms of the University's Sexual Harassment Policy.

The Senate of the University has approved the notation "Mention: français," which a student may earn within a Pass or Honours degree under certain prescribed conditions.

The student must demonstrate the capability of working in French within the discipline of his or her degree, and must also demonstrate knowledge of the history and culture of French Canada. The specific credit requirements (three for a Pass degree and four for an Honours degree) are developed by individual departments within the University according to the Senate's guidelines, and approved by the Senate. Students wishing to register for the notation must first demonstrate capability of working in French at the First-year level. Students should refer to their departments for specific information about what arrangements may be available.

The following Schools, Institutes and Departments offer the "Mention: français": Canadian Studies, History, Linguistics and Applied Language Studies, Philosophy, Political Science, Psychology, Public Administration and Sociology and Anthropology.

The academic dress of Carleton University is a compromise between the style of hoods outlined in the American Intercollegiate Code and the dress of the ancient foundations of Britain and America. All three hoods, Bachelor's, Master's, and Doctor's, are of the simple or Oxford shape. The Bachelor's hood is made of black stuff, the Master's and the Doctor's of black silk, and all are lined with silver silk with two chevrons, one of red and one of black. From Bachelor's to Doctor's the hoods are progressively longer and opened to show more and more of the lining.

The velvet border of the hoods, 5 cm. in width for Bachelor's, 7.5 cm. for Master's and 8 cm. for Doctor's, denotes the degree granted, according to the following colour combinations: *Architecture*, cerise; *Arts*, white; *Commerce*, camel brown; *Computer Science*, royal blue; *Engineering*, orange; *Industrial Design*, dark cardinal; *Journalism*, white with a black cord sewn slightly in from the lower border; *Management Studies*, camel brown with a black cord sewn slightly in from the lower border; *Music*, Venetian pink; *Public Administration*, peacock blue; *Science*, golden yellow; *Social Work*, cream; *Doctor of Philosophy*, purple.

The Bachelor's gown, to be worn with the above hoods, is of full length, made of black stuff, with a gathered yoke behind, and long open-fronted sleeves. The Master's gown is of full style, made of black silk or rayon, with full gathered yoke behind, and closed sleeves with an opening at the elbows. The Doctoral gown is the same style as the Master's, made of fine royal blue cloth with facings of a light blue silk.

The gown of the Honorary Doctor of Laws, Literature, Science, Engineering, Architecture or Fine Arts is a blue robe with bell-shaped sleeves, made of fine royal blue cloth with facings and sleeves in light blue silk. The hood is made of the same material as the gown, has the same lining as that for the degrees granted by examination, and is bordered with dark mauve for the degree of Doctor of Laws, vibrant blue for the degree of Doctor of Literature, red for the degree of Doctor of Science, orange for the degree of Doctor of Engineering, cerise for the degree of Doctor of Architecture, and dark cardinal for the degree of Doctor of Fine Arts.

General Information

1. This Calendar is published several months in advance of the 1996-97 academic year. The University reserves the right to change fees, charges and refund policies without notice.

2. Tuition fees include laboratory and survey camp fees, where applicable. In addition to tuition, compulsory miscellaneous fees are also assessed.

3. The following are the fee assessments for the 1995-96 Fall/Winter Session. Fees are subject to revision and therefore the 1996-97 Fall/Winter Session *Registration Instructions and Class Schedule* booklet, available July, 1996, should be consulted for any revisions to the following amounts.

4. Please refer to Notes p. 57 for further explanations of some of the following fee components, indicated by an asterisk (*).

Composite Tuition and Compulsory Miscellaneous Fees 1995-96 Fall/Winter Session Full-Fee Assessment*

Canadian Citizens
Permanent Residents
Exempted International
Students*

International Students

Degrees in Arts, Social Sciences
(excluding Commerce), Science
(excluding Computer Science Co-Op),
and Special Students - Two Terms

\$2798.25^a

\$9590.25^a

Commerce - Two Terms

2813.25^b

9605.25^b

Computer Science Co-op - One Term

1444.15^c

4840.15^c

Computer Science Work Term*

280.00

280.00

Degrees in Engineering - Two Terms

3073.25^d

15481.25^d

Architecture, Industrial Design - Two Terms

3008.25^a

15416.25^a

Qualifying Year - Two Terms

3534.25^a

3534.25^a

The above fees include **Compulsory Miscellaneous Fees** as follows:

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>
Accident/Sickness Insurance*	\$46.05	\$46.05	\$46.05	\$46.05
Students' Association	80.40	95.40	40.20	95.40
Athletics	133.44	133.44	66.72	133.44
Health Services	37.36	37.36	18.68	37.36
University Centre	50.00	50.00	25.00	50.00
CUESEF*	—	—	—	50.00
Total	\$347.25	\$362.25	\$196.65	\$412.25

Per-Credit Assessment*

Canadian Citizens Permanent Residents Exempted International Students*

International Students

Degrees in Arts, Social Sciences
(excluding Commerce), Science
(excluding Computer Science Co-Op),
and Special Students

\$537.60^b

\$1906.60^b

Commerce

540.60^a

1909.60^a

Computer Science Co-op

546.60^b

1915.60^b

Degrees in Engineering

549.10^c

3085.10^c

Architecture, Industrial Design

537.60^b

3073.60^b

Qualifying Year

697.00^b

697.00^b

Note: the above fees include **Compulsory Miscellaneous Fees** as follows:

	a	b	c
Students' Association	\$19.08	\$16.08	\$19.08
Athletics	26.68	26.68	26.68
Health Services	6.84	6.84	6.84
University Centre	10.00	10.00	10.00
CUESEF*	—	—	8.50
Total	\$62.60	\$59.60	\$71.10

Notes:

1. Fees are assessed by term, based on the number of credits per term. For fee assessment purposes, a Fall-Winter 1.0 credit course is assessed as 0.5 credit per term.
2. Students at the full-fee assessment rate are defined as those taking 2.0 credits or more per term. A fixed fee amount is assessed and no additional fees are assessed for credits in excess of the 2.0 credit load per term.
3. Students at the per-credit assessment rate are defined as those taking fewer than 2.0 credits per term.
4. Half-credit course fees will be assessed at one-half the full-credit course amounts.
5. Re-registration in an Honours paper or thesis will be assessed fees equivalent to the prevailing half-credit course fee.
6. The student accident/sickness insurance coverage is based on a one-year period from September 1 to August 31. The insurance fee of \$46.05 is payable once a year at registration in September. Students wishing to opt out of the plan or change coverage must contact the Students' Association (401 University Centre) before October 1 (February 1 for new January registrants).
7. The Computer Science Work Term charge is a charge for program costs associated with cooperative education. These costs include such things as the administration of job placement services, the supervision of the student's work while employed, and the evaluation of the student's work-term reports and employer's assessment reports. The charge is not a tuition fee and therefore is not eligible for income tax deduction. This charge does not include any of the compulsory miscellaneous fees.
8. In a referendum in November, 1993 the Carleton Students Engineering Society voted in favour of a student donation to support the Carleton Undergraduate Student's Engineering Fund (CUESEF). The donation for part-time students is \$8.50 per full-credit course. A donation receipt will be produced and distributed each February. Cancellations and refunds for students who do not wish to support the Fund will be available following each registration period, by application to the Office of the Dean of Engineering, at dates and times to be announced.
9. For information on Exemptions from International Fees, please see p. 58.

Exemptions for International Students

Subject to approval by the Office of Admissions and Academic Records, the following categories of international undergraduate students are exempt from the international students' fee indicated above and will instead be assessed the regular tuition fee:

1. Persons who are permanent residents within the meaning of the Immigration Act.

Note: A person who has met "all the preliminary requirements" for permanent residency status, and who can present a letter from Canada Employment and Immigration confirming this, will be assessed for regular tuition fees. Such letters must be presented by November 1 for the Fall Term and February 1 for the Winter term.

2. Dependents of Canadian citizens or Permanent Residents.

3. Persons and their dependents who have been recognized as Convention Refugees within the meaning of the Immigration Act or persons and their dependents who applied for Convention Refugee Status prior to January 1, 1989.

4. Persons or dependents of persons admitted to and remaining in Canada under diplomatic visas or under the Visiting Forces Act.

5. Persons or dependents of persons admitted to and remaining in Canada under Clause 10 (c) of the Immigration Act for the purpose of engaging in employment (other than graduate teaching and research assistants).

6. Persons or dependents of persons, admitted to Canada under clause 10 (a) or (b) of the Immigration Act who are sponsored and financially assisted by agencies such as the Canadian International Development Agency, the International Development Research Centre, the World Bank, the Caribbean Development Bank and the African Development Bank, by various aid programs of the United Nations and its agencies or by a recognized registered charitable organization.

7. Persons participating in a cultural exchange agreement between the Government of Canada and the government of another country or the Ontario-Jiangsu Academic Exchange Agreement or in a formal agreement between Carleton University and a post-secondary institution in another country.

Note:

A dependent of a person includes his/her spouse; unmarried child; or spouse's unmarried child. The dependent status must be fully documented and must have been established a minimum of three years before the student's application for exemption.

Undergraduate students who believe they qualify for exemption under one of the foregoing categories must submit documentation to support their claim to the Records Office, 405 Robertson Hall. Until a request for exemption has been requested and approved, students will be assessed the International Student fees.

Undergraduate students who were previously exempted, and whose basis of exemption has changed due to circumstances beyond their control, should

also contact the Record's Office so that an assessment can be made to determine if their exemption would continue.

Tuition Fees: Senior Citizens

All persons 60 years of age and over as of the last day for late registration may register in degree-credit courses and have their tuition fees waived. The charge to these students is a \$2.50 per term registration fee.

Late Registration Charges

The late registration charge applies when payment arrangements over the phone or in-person are made on the first day of classes or later, or when mail-in or bank payments are received in the Business Office on the first day of classes or later and is non-refundable. For the last day for late registration in any session or term, see The Academic Year, p. 10.

Full-Fee Assessment	\$120.00
Per Credit Assessment	\$ 24.00

Method of Fee Payments

Fees may be paid in accordance with either of the following plans.

1. Payment in full at the time of registration.
2. Payment in two installments:
 - (a) At registration, the amount payable is the fee assessment for the fall-term portion of the courses selected plus a deferred payment charge (\$40.00 at the full-fee assessment rate and \$16.00 per 1.0 credit at the per-credit assessment rate);
 - (b) at or before January 15, all fees remaining due including payment for winter-term courses registered for in September.

Scholarships, bursaries, and loans administered by the University shall be applied first to fees, provided this is not contrary to the terms of the award.

Personal cheques will be accepted for payment of accounts but the University reserves the right to cancel the use of this method by any student if it is abused. A service charge of \$12.50 will be made for each cheque returned to the University as non-negotiable for any reason. Students are requested to have their own cheque forms available when making payments.

Miscellaneous Charges

1. Transcripts

Each student will be eligible for one free transcript at graduation. All other transcript requests will be processed after payment is made in advance at the Business Office, at the rate of \$8.00 per transcript. Mailing address: Transcript Clerk, 405 Robertson

Hall, 1125 Colonel By Drive, Carleton University, Ottawa, Ontario, K1S 5B6. (Enclose \$8.00 per transcript.)

An extra charge per transcript will be added to offset the cost of mailing transcripts at the request of students as follows:

Ontario	\$3.25
Rest of Canada	5.25
Outside Canada	8.50

2. Letters of Permission

A charge of \$25.00 per course, (regardless of credit value) to a maximum of \$100.00 per academic session, will be assessed on each request for a Letter of Permission. This charge is payable in advance at the Business Office.

3. Examination Charges (Non-Refundable)

(a) *Written at Carleton:* A charge of \$50.00 per paper applies for supplemental and grade-raising examinations.

(b) *Written Off-Campus:* In addition to the charge in (a) above, a charge of \$50.00 applies for each paper written at a location other than at Carleton.

(c) A charge of \$25.00 applies for each deferred examination.

(d) Examination charges are non-refundable.

4. Review of Grades

(a) A charge of \$50.00 per course applies on review of grades.

(b) The charge for a review of grades will be refunded if the grade is raised.

5. Challenge for Credit

A \$150.00 non-refundable charge applies for each challenge for credit. (See also p. 47.)

6. Certificates for Income Tax Purposes

Tuition Certificates and Certificates of Attendance for income tax purposes will be available from the Business Office by the end of February. Students will be charged \$15.00 in advance for each duplicate/replacement tax certificate requested.

7. Replacement of Student Identification Cards

A charge of \$20.00 will be assessed for the replacement of student identification cards or the re-issuance of a validation sticker within the session, payable at the time of replacement or re-issuance. Returning students will be required to pay this amount before obtaining a new card at registration in the event that the student's card is not available for validation. The identification card remains the property of Carleton University and it may be cancelled or withheld at the discretion of the University.

8. Diplomas

Diplomas are issued at the time of graduation or are mailed to students who are unable to attend Convocation ceremonies. Students who require a replacement diploma due to loss or damage of their original diploma may order a Display Diploma by contacting the Office of Admissions and Academic Records, 405 Robertson Hall, 1125 Colonel By Drive, Ottawa, On-

tario K1S 5B6. The charge for a Display Diploma is \$80.00 (unframed) \$140.00 (framed).

9. Certification of Enrolment

Students who require certification of enrolment for external purposes may obtain the required documentation by contacting the Office of Admissions and Academic Records, 405 Robertson Hall. Certifications can only be produced after registration has been completed and tuition fees have been paid. The charge for such certifications is \$8.00. Students who have received forms from external agencies which require certification should submit such forms to Admissions and Academic Records, 405 Robertson Hall for verification. Documents relating to Student loan programs and/or financial assistance should be processed through the Awards Office, 202 Robertson Hall. There is no charge for these latter two services.

10. Convocation Charge

A charge of \$30.00 applies to all graduands who attend Convocation. This charge is intended to help defray the costs associated with the event, including the provision of gowns and hoods and the rental of facilities. Payment of this charge must be made, by cash or cheque, at the time graduating students collect their gowns and hoods.

11. Application for re-admission or transfer to another degree program

An application fee of \$40.00 is charged to all students currently or previously enrolled at Carleton University who apply to be admitted as regular students from special student status, to students wishing to transfer from one degree program to another, to persons wishing to be re-admitted to the University or to those applying for a second undergraduate degree program.

12. Transfer of Credit Evaluation Processing Charge

A fee of \$40.00 is assessed to all applicants who have completed post-secondary studies and who may qualify for advanced standing. CEGEP applicants are excluded from this fee.

13. Special Student Application Charge

An application fee of \$35.00 is charged to all persons applying to take courses as a Special student. (see p. 63).

14. Admission Processing Charge

A fee of \$35.00 is charged to all applicants for admission to First Year who are not currently enrolled in an Ontario High School or a CEGEP. This charge does not apply to those applicants who are applying for re-admission, transferring to another degree program, or to those applicants with post-secondary studies.

15. Deferred Admission Charge

A fee of \$30.00 is charged to all applicants who request a deferral of their admission offer. (See p. 39).

16. OSAP Assignment Charge

A charge of \$35.00 applies to all students using the OSAP assignment fee payment method.

Instructional Television Charges (itv)

All existing university charges may be applied to students enrolled in Instructional Television course sections. Charges for Tapes-to-You Service, available to eligible students who study at a distance, are listed below:

1. Tapes-to-You Service

Charges for service include either delivery of course videocassettes to an individual student's address or to a Community Lending Centre for shared use, and will be imposed on those who arrange for this service. Charges for the 1995/96 academic year were as follows:

Individual Service

*Ontario delivery addresses \$85.00/academic term
 *Quebec delivery addresses \$110.00/academic term

*Delivery to provinces and territories outside Ontario and Quebec \$190.00/academic term

*Please inquire about delivery arrangements and costs to sites outside Canada.

Community Lending Centre

\$30.00/academic term (non-refundable charge)

See *itv* Brochure for Community Lending Centre locations.

Please note: The Tapes-to-You (TTY) service arrangements must be made before the deadlines noted for each academic term in the *itv* Brochure. Service will not commence until Tapes-to-You charges are paid in full.

2. Late Registration Charges - Tapes-to-You Service

A Late Arrangement Charge of \$20.00 will be levied for all Tapes-to-You (TTY) arrangements made in Late Registration periods as per deadlines noted for each academic term in the *itv* Brochure. For details, refer to the *itv* Brochure under Tapes-to-You Service.

3. itv Off-Campus Examination Arrangements

itv students who have arranged for Tapes-to-You service and live at a distance (160 km) from the university, may apply for off-campus examination service for each *itv* course in which they are registered. Where possible, students will be expected to write off-campus examinations at Examination Centres within 160 km of their local area. A charge of \$50.00 per course will be levied for this service. These charges must be paid in advance according to *itv* Off-campus Examination Arrangements Deadlines and service deadlines outlined in the *itv* Brochure.

4. Miscellaneous Charges

itv reserves the right to levy charges for administrative services such as change of delivery addresses, preparation of materials and arrangements for Independent Study Courses and for the replacement of unreturned video or print materials.

Fee Adjustment Schedule (see p. 61)

Adjustment Amount	Adjustment Period	
	Fall Term	Winter Term
Total adjustment	before midnight Aug. 23	before midnight Dec. 20
Total adjustment less a registration charge of \$100.00 (full-fee assessment) \$25.00 per 0.5 credit (per-credit assessment)	Aug. 24 through to Sept. 6	Dec. 21 through to Jan. 3
Total adjustment less: CUSA Ins., CUESEF (Engineering only) and		
15%	Sept. 7 - 13	Jan. 4 - 10
30%	Sept. 14 - 20	Jan. 11 - 17
45%	Sept. 21 - 27	Jan. 18 - 24
60%	Sept. 28 - Oct. 4	Jan. 25 - 31
75%	Oct. 5 - 11	Feb. 1 - 7
90%	Oct. 12 - Nov. 8	Feb. 8 - March 14
No fee adjustment	Nov. 9 onwards	March 15 onwards

If the fee adjustment allows for a credit, it will be applied to the student's account and any amounts owing at that time will be deducted before a refund cheque is prepared. It is best to inquire about fee adjustments and implications before making changes.

Fee Adjustments for Course Changes and Withdrawals

Students who withdraw from a course, or from the University, are required to do so by using the Touchtone Telephone Registration System, or by notifying their Faculty Registrarial Services Office in writing. The effective date of withdrawal is the date recorded by the touchtone registration system or the date of receipt of notice of withdrawal by the Faculty Registrarial Services Office. Fee adjustments are calculated solely on the basis of the effective date of withdrawal/change, and according to the following procedures.

Fees are assessed by term, based on the number of credits per term. For fee assessment purposes, a Fall-Winter 1.0 credit course is assessed as 0.5 credit per term.

Fees for all students are assessed and adjusted weekly, as of Fridays at midnight if the total number of credits for a term changes. If the total number of credits remains unchanged at Friday midnight, even if several course changes were made during the week, no fee adjustment occurs.

Changing Status

If a student's course load has changed from the per-credit assessment rate (fewer than 2.0 credits per term) to the full-fee assessment rate (2.0 credits or more per term) at midnight Friday in any week, tuition fees will be adjusted upwards to the full-fee assessment rate.

If a student's course load within a term has changed from full-fee assessment to per-credit assessment at midnight Friday in any week, the student's account will be credited as if completely withdrawing from the full-fee assessment rate and charged at the per-credit assessment rate for the remaining courses. (See the Fee Adjustment Schedule p. 60.)

The Accident/Sickness Insurance fee will apply whenever a student's status is assessed at the full-fee assessment rate. For complete withdrawals, the insurance fee will be included in the full fee adjustment up to midnight Friday, September 6, 1996. For complete withdrawals after September 6, 1996, changes to the per-credit assessment rate or students wishing to opt out of the plan, the accident/sickness insurance fee is refundable only through application to the CUSA office before October 1 (February 1 for January registrants not registered in the previous term).

Late Registration charges are non-refundable.

Deferred payment charges are based on the course load at the time of completion of registration and are non-refundable except in the cases of complete withdrawals up to midnight Friday, September 6, 1996.

Fee Adjustment Schedule

The preceding schedule (see p. 60) applies to all categories of fees, excluding Computer Science Work term. A registration charge or percentage adjustment to the assessed Composite Tuition and Compulsory Miscellaneous Fees (see p. 56) will be made according to the schedule. Note that course

loads are assessed as of midnight Friday each week during the teaching term.

Overdue Accounts

Fees are due and payable at the time of registration. Students may, however, be permitted to pay in two instalments (refer to method of Fee Payments, p. 58), in which case the last payment due-date is January 15. Should a student fail to complete the payments as arranged at registration, or fail to make satisfactory arrangements for the discharge of fees or other outstanding amounts by the last payment due-date, the University reserves the right to cancel the student's registration. All charges and outstanding fees accrued to the date of cancellation will remain due and payable on the student's account.

Delinquent Accounts

Registration shall not be complete until a satisfactory arrangement has been made for the payment of fees, and may be cancelled should the student fail to meet these arrangements.

If students owe the University any money at the end of an academic session their accounts become delinquent. Students with delinquent accounts will not have access to final grades, including official transcripts, and will not be permitted to register again until all monies owing have been paid in full by cash or certified cheque.

The University reserves the right to use any legal means to reclaim monies owing.

Locker Rentals

Telephone: 520-3623

Rent is charged for the use of locker space during the academic year. Lockers are allocated on a first-come first-served basis and may be shared. Locks will be removed from lockers occupied by unauthorized persons and the contents turned over to the Parking Office. A fine will be imposed when contents are released. No refunds or exchanges will be made.

Lockers must be vacated by May 1 for the Fall/Winter session and by August 20 for the Summer session, after which they will be cleared and the contents treated as abandoned and will be disposed of by the University without further notice. Lockers are not a safe space to store valuables. The University assumes no responsibility for lost, stolen or damaged articles.

Parking

Telephone: 520-3623

Permission to park on the campus is granted, for a charge, to students and others associated with the University, but this permission is conditional upon

co-operation in the observance of the regulations. Penalties will be imposed for infractions and, under certain circumstances, cars will be towed away at the owners' risk and expense. Security officers are authorized to issue City of Ottawa traffic tickets on campus. Fines for City of Ottawa tickets are set by the city and may vary from time to time. Any vehicle not displaying a valid Carleton Permit is subject to this type of ticket.

Examination grades will be withheld from students owing sums of money to the University. Unless cause can be shown, the third infraction may lead to withdrawal of parking privileges. The regulations related thereto are available in the Parking Office. Students and staff who bring cars to the campus are expected to make themselves familiar with these regulations.

The University Library is located on the south-west side of the main quadrangle. The collection consists of over 1,500,000 books and periodicals and more than one million microfilms, microfiches, cassettes, discs, and maps. The majority of these items are on open shelves.

The library collection is arranged alphabetically by call number, starting with the letter 'A' on the fifth floor and ending with 'Z' on the first floor. The first floor houses Audio-Visual, Microform Services, theses and photocopy services; the second (main) floor contains Reference and Information, Documents, Maps, Circulation and Reserves, Data Centre, and Interlibrary Loans services; the third floor holds the Library Administration offices; the fourth floor houses microcomputer labs; and, the fifth floor contains Special Collections and Archives. Seating is available on all floors.

The library is governed by regulations approved by Senate, copies of which are available at the Circulation Desk.

The library collection is protected against theft by an electronic book detection system. As a condition of use of the library, all users must submit books, briefcases, bags, etc. for inspection at the exit, if requested to do so. Late return fines are charged for overdue books and, as noted under "Delinquent Accounts," final grades and transcripts will be withheld from students owing money to the University.

Acting University Librarian

Martin Foss

Associate Librarians

Terry Clark (Systems and Technical Services)

Linda Rossman (Information Services)

Department Heads

Gail Catley (Acquisitions)

Bozena Clarke (Circulation Services)

Barbara Farrell (Maps)

Alison Hall (Cataloguing)

Susan Jackson (Documents)

Callista Kelly (Interlibrary Loans)

Elizabeth R. Knight (Reader Services)

Dorothy Rogers (Gifts)

302 Robertson Hall
Telephone: 520-3500

Officers of the School

Director
Bemadette Landry

Special Student Services
Regina Aulinskas (*Assistant Director/Registrar*)
Karen Spencer (*Registration Co-ordinator*)

General Information

The School of Continuing Education, in conjunction with other departments at Carleton, co-ordinates and develops both existing and new activities in adult, part-time and non-traditional education on-campus and at a distance. The School of Continuing Education is dedicated to providing lifelong learning opportunities to all those who have the ability and desire to learn.

All currently registered and prospective Special students (see Student Classifications, below), should contact the School for registrarial information and to make academic orientation appointments (520-3500). Evening appointments are available on request.

Office Hours

Labour Day to April 30
Monday to Friday, 9:00 a.m. - 5:00 p.m.
Monday to Thursday, 6:30-8:30 p.m.

May 1 to Labour Day
Monday to Friday, 8:30 a.m. - 4:30 p.m.
Monday to Thursday, 6:30 p.m. - 8:30 p.m.

Student Classification

As outlined on p. 15, there are several distinct student classifications at Carleton. Students are classified on the basis of whether they have been formally admitted to a degree program, not on the basis of whether they are studying part-time or full-time.

Degree students are those who have been admitted to, and are enrolled in, a degree program, whether graduate or undergraduate, on either a full-time or part-time basis.

Special students are those who have not been admitted to a degree program but who are taking degree-credit courses to qualify for admission, to improve professional qualifications, for transfer credit or for personal interest.

Professional Development students are those enrolled for non-credit professional development courses offered through the Carleton Professional Development Centre. Detailed information regarding all non-credit programming can be obtained by telephoning 521-1988.

Special Students

Any person interested in pursuing learning opportunities is eligible to apply as a part-time Special student in degree-credit courses, subject to course availability and course prerequisites. The application fee is \$35.00.

Special students enrol in the same courses and meet the same course requirements as students in degree programs and may register for day, evening, instructional television or Tapes-to-You courses at a distance.

All registrarial services for Special students are provided through the School of Continuing Education. Current or prospective part-time degree students are encouraged to consult the appropriate Faculty regulations.

Proficiency in English

Since the instructional language of the University is English, applicants (including Special students), must be able to understand and be understood in English, both written and oral.

See p. 31 for the statement of policy governing English language requirements for non-native speakers.

Course Load

Special students may normally enrol in a maximum of 2.0 credits per academic session (Fall/Winter or Summer) and no more than the equivalent of 1.0 credit (e.g. two half-credits) in any one term. Deferred, supplemental, and grade-raising examinations scheduled during the term and audit courses are included in calculating the course load. (See p. 16.)

Special students who have completed one or more full credits with an overall CI of 5.00 in all credits taken at Carleton (including failures) may register in the equivalent of 1.5 credits in each term of the Fall/Winter session.

During the Fall/Winter session, Special students may enrol in 5.0 credits under either of the following conditions:

1. The student is enrolled full time in a degree program at another institution and can present a Letter of Permission authorized by an appropriate official of the institution; or
2. The student holds an undergraduate degree from a recognized institution and wishes to pursue further study for professional development or in preparation for entry into graduate study.

Course Selection

Anyone wishing to be admitted eventually to a degree program is advised to note the specific Faculty requirements for course selection and the admission requirements for Special and Mature entrants as they are listed in this Calendar. Special students who have not completed an OSSD or equivalent may need to upgrade their qualifications by enrolling in courses at the Qualifying-University year level. Individuals seeking admission who need further information should inquire at the Office of Admissions and Academic Records or the School of Continuing Education.

Special Students Enrolling in Graduate-Level Courses

Anyone wishing to enrol in a graduate-level course as a Special student must obtain a letter of permission from the Chair or Supervisor of Graduate Studies of the appropriate department. Anyone considering a graduate degree is urged to contact the Faculty of Graduate Studies and Research prior to registration as a Special student. Special students enrolled in a graduate-level course are subject to Special student regulations and English language proficiency requirements outlined in the Undergraduate Calendar. (See also p. 17.)

Auditing

With the permission of the instructor, students may register as auditors in those courses which are not designated as having limited enrolment. Auditors receive no grade and no credit for courses audited. (See p. 47.)

Changes from credit to audit are not permitted in limited enrolment courses.

Continuation for Special Students

In order to be eligible for further registration, returning Special students must pass 4.0 of their previous 6.0 credits (or equivalent) with a C- standing or better in at least 2.0 credits (or equivalent). A grade of *Abs* is judged equivalent to a grade of *FNS* in determining eligibility for further registration as a Special student. Students who do not meet the continuation requirement will be required to withdraw from the University.

Students who are required by the University to withdraw from a degree or certificate program are ineligible to register as Special students for one calendar year. In addition, such students should not normally expect to gain readmission to a degree program on the basis of work completed as a Special student, nor should they expect to retain credit for these courses.

Course Change and Course Withdrawal

Special students wishing to make any change in their registration must do so through the Carleton University Touchtone Telephone Registration System.

Course changes must be made by the deadline dates designated in the Academic Year. (See p. 10.) *Changes include additions, withdrawals, section changes, as well as changes of status from credit to audit or vice versa.*

Please note that students who are withdrawing from a course or courses, or from the University entirely, must do so through the Carleton University Touchtone Telephone Registration System.

The date of withdrawal is the date on which the phone call is made to the Touchtone Telephone Registration System. Fee adjustments will also be calculated as of that date.

It is not possible to withdraw from a course(s) or from the University after the last date for withdrawal. (See p. 10.)

For complete details about fee adjustments see p. 60 (Fees).

Notes:

1. *The responsibility for taking all steps necessary for withdrawal rests entirely with the student. Non-attendance of classes, or informing an instructor of intent to withdraw does not constitute withdrawal.*
2. A student who withdraws from a course retains no academic credit for any part of that course.

Supplemental and Grade-Raising Examination Privileges

Supplemental and/or grade-raising examinations written by Special students will be graded according to the regulations of the Faculty in which the course is given. A Special student registered in 1.0, 2.0 or 3.0 credits, who fails only 1.0 credit, may write supplemental and/or grade-raising examinations to a maximum of 1.0 credit. Supplemental and/or grade-raising examination privileges will not be granted to students who fail more than 1.0 credit.

Special students registered in 4.0 credits may write supplemental and grade-raising examinations to a maximum of 1.0 credit each, or 2.0 credits of grade-raising examinations.

If they are registered in 5.0 or more credits they may write supplemental and/or grade-raising examinations to a maximum of 2.0 credits.

Supplemental and/or grade-raising examination privileges will not be granted to a full-time Special student who does not pass at least 3.0 credits during the Fall/Winter session.

A Special student who wishes eventually to enrol in a degree program of a Faculty at Carleton University is strongly encouraged to pay particular attention to the supplemental and/or grade-raising examination regulations for that faculty.

Special students are eligible to write deferred final examinations under the conditions indicated on p. 51.

Deferred final examination privileges are considered only in instances where students have completed all tests and assignments and are in good academic standing in the course.

Special students must make application for supplemental and special examinations at the Continuing Education office by the published deadlines. (See p. 10.)

Appeals

A Special student has the right to appeal any decision regarding the application or interpretation of academic regulations made by the School of Continuing Education.

Appeals must be made in writing and should be submitted to the Secretary, Special Student Policy and Appeals Committee, c/o School of Continuing Education, 302 Robertson Hall, Carleton University.

Financial Assistance

Special students interested in obtaining financial assistance are advised to contact the Student Awards Office at 520-3600 eight weeks prior to registration. For further information, see p. 22 (Awards Office).

Special Students and Mature Applicants Admissions

Admission to a Degree Program as a Special Student

Special students may be admitted to a degree program if their academic achievement at Carleton University indicates a reasonable probability of future academic success. Previous post-secondary studies at other institutions will also be taken into consideration at the time the application for admission is evaluated. Students with previous, unsuccessful post-secondary studies are encouraged to contact the Office of Admissions and Academic Records or the School of Continuing Education before attempting to qualify for admission on the basis of studies as a Special student.

Normally, in the Faculties of Arts and Social Sciences, Special students can be considered for admission to a Pass degree program after successfully completing at least 4.0 credits out of the first six attempts with a CI of 4.00 or better. The CI is calculated by dividing the total number of grade points accumulated over all attempts by the total number of attempts. (See Academic Standing, section 5.4, p. 78.) Provided that there have been no unsuccessful attempts, students who perform at a higher level can gain admission after the successful completion of fewer credits.

2.0 credits (or the equivalent) with a CI of 10.00 or better, or
2.5 credits (or the equivalent) with a CI of 8.50 or better, or
3.0 credits (or the equivalent) with a CI of 7.00 or better, or
3.5 credits (or the equivalent) with a CI of 5.50 or better.

Normally, in the Faculty of Science, Special students can be considered for admission to a Major degree program after passing at least 4.0 *approved* credits (or the equivalent) with a C- standing or better in at least 2.0 credits (or equivalent). Students seeking admission to the Faculty of Science who do not have the necessary prerequisite subjects are usually not considered for admission until the necessary prerequisites have been successfully completed in addition to the 4.0 approved credits. The prerequisite subjects (OACs or equivalents) are found under *Prerequisite Subjects* at the end of this section. A grade of 60 percent or better is required in each prerequisite subject.

Special students wishing to apply for admission must meet the requirements within the previous 6.0 credits and cannot present more than two supplemental or grade-raising examinations in meeting the requirements for admission.

Special students wishing to apply for admission to the Faculty of Engineering or the Schools of Architecture, Business, Computer Science, Industrial Design, Journalism, or Social Work, are urged to consult with the Office of Admissions and Academic Records or the School of Continuing Education.

Admission to a Degree Program as a Mature Applicant

A) Mature Applicants

Mature Applicants are persons who satisfy all of the following requirements:

1. are 21 years of age, or over, by December 31 of the year in which they wish to enrol; and
2. are Canadian citizens or permanent residents of Canada; and
3. do not meet the normal admission requirements as published in this Calendar; and
4. have been away from full-time studies for a minimum of two calendar years; and
5. have not attended a university or college as full-time students.

Applicants who meet the definition of Mature Applicant will be considered for admission to full-time or part-time studies. They can apply for admission to a Pass program in the Faculties of Arts, or Social Sciences, or to a Major program in the Faculty of Science or to a degree program in Engineering, Architecture, Computer Science, Industrial Design, or Social Work.

These applicants are required to submit proof of age, biographical information and a transcript of their most recent studies.

B) Special Students

Special students who meet all of the criteria for Mature Applicants can be considered for admission as Mature Applicants if

- (a) they have completed as *Special students*, at Carleton University, 1.0 credit with a C- or better, in the first attempt (or in both of the first two half-credit attempts); and
- (b) they are eligible to continue as Special students at Carleton University; and
- (c) they have completed any additional degree program prerequisites.

Mature Applicants, who as Special students at Carleton University, have not obtained a grade of C- or better in 1.0 credit (or two half-credits), in the first attempt (or in both of the first two half-credit attempts), can attempt to qualify for subsequent admission by taking additional courses as a Special student at the University.

Individuals seeking admission under the Mature Applicant status who need further information should inquire at the Office of Admissions and Academic Records or the School of Continuing Education.

Admission to the Faculties of Arts, or Social Sciences

Mature Applicants will normally be admitted to the First year of a Pass degree program in the Faculties of Arts or Social Sciences, or the First year of the undergraduate degree program in Social Work if they have:

- (a) secondary school graduation in an academic program with a 60 percent average or better; or
- (b) completed, as a Special student, at Carleton University, an appropriate 1.0 credit or two half-credits with C- or better in the first attempt (or in both of

the first two half-credit attempts); or
 (c) other academic or work experience which, in the opinion of the admissions committee, indicates a likelihood of success at university.

Mature Applicants are not usually considered for admission to Honours programs in Arts or in Social Sciences and to the programs in Business, Humanities, Journalism, Music or Public Administration. If, however, at the end of their First year in another degree program, they meet the requirements for one of the above-mentioned programs, they can apply to transfer to that program.

Admission to the Faculty of Engineering, the Faculty of Science, the Schools of Architecture, Computer Science, and Industrial Design

Mature Applicants can be considered for admission to the First year of a Major program in the Faculty of Science or to the First year of a degree program in the Faculty of Engineering and in the Schools of Architecture, Computer Science, or Industrial Design if they have the prerequisite subjects for the program to which they wish to apply and if they have:

- (a) secondary school graduation in an academic program with a 60 percent average or better; or
- (b) completed, as a Special student, at Carleton University, an appropriate 1.0 credit or two half-credits with C- or better in the first attempt (or in both of the first two half-credit attempts); or
- (c) other academic or work experience which, in the opinion of the admissions committee, indicates a likelihood of success at university.

The prerequisite subjects (OACs or equivalents) for Engineering, Science, Architecture, Computer Science, and for Industrial Design are found under *Prerequisite Subjects* at the end of this section. A grade of 60 percent or better is required in each prerequisite subject.

Persons applying for admission to these undergraduate degree programs, without the necessary prerequisites, will not normally be considered until the prerequisite subjects have been successfully completed. All applications are reviewed on an individual basis.

Mature Applicants are not usually considered for admission to Honours programs in Science. If, however, at the end of the First year of a Major program, they meet the requirements for one of the Honours programs, they can apply to transfer to that program.

Prerequisite Subjects

In programs such as Architecture, Computer Science, Engineering, Industrial Design and Science, students must have completed mathematics and science courses at least at the OAC level before being considered for admission. These are called "prerequisite subjects". The specific OACs (or the equivalent) are listed by program.

Architecture

Calculus
 Algebra/Geometry
 Physics

Computer Science

Calculus
 Algebra/Geometry
 Physics, for certain options (see p. 41.)

Engineering

Calculus
 Algebra/Geometry
 Chemistry
 Physics

Industrial Design

Calculus
 Algebra/Geometry
 Chemistry
 Physics

Science

Calculus and two of:
 Algebra/Geometry
 Biology
 Chemistry
 Physics

A grade of 60 percent or better is required in each subject.

Transfer Credits to Another University

Students who wish to attend Carleton to receive credits toward a degree program taken elsewhere are eligible to register at Carleton as Special students. Student must provide Continuing Education with a Letter of Permission from their home university well in advance of the session for which they plan to register.

302 Robertson Hall
Telephone: 520-3500
Fax: 520-4456
email: itv@carleton.ca

Director
Robin Allardyce

Beverlae Buckland (*Instructor/Student Services*)
Jeff Cohen (*Presentation and Technical Operations*)
Shelly O'Hara (*Itv Liaison/Tapes-to-You Service*)

General Information

Carleton University provides opportunities for full- and part-time studies to students on the campus and beyond through several types of access to instruction and learning. These include courses offered on campus presented through classroom lectures, seminars, laboratory practice and tutorials. An alternative mode of access is delivery of courses by Instructional Television (itv). Televised courses or course sections are available to students on campus, as well as to those participating from a distance. Instructional television may be considered as an opportunity to experience learning in a different way and can provide students with more flexibility in course selection and in the development of a personal timetable.

Carleton's alternative delivery media are cable television (itv) and videocassette. Course lectures are broadcast without restriction on cable television in the Ottawa area. For registered students living outside the metropolitan Ottawa cable area, course lectures can be accessed through: selected presentations arranged with cable television companies in smaller communities and by special arrangement with itv's Tapes-to-You Service for home delivery of course lecture tapes or lending services provided by participating community lending centres. Lectures may also be viewed on the Carleton campus or borrowed overnight from the University's MacOdrum Library. Further information is available in the *Itv Brochure* from Instructional Television.

The Students

For the full-time or part-time degree or Special student, itv provides alternative access to courses particularly suited to a program of study, to which normal access may be otherwise denied because of timetable conflicts, space restrictions in on-campus sections or geographic distance from campus. As well, this service allows students to re-enter the education stream, earn credits needed to complete a degree, or test their suitability for university studies. Students registered in itv courses are expected to meet all University and Faculty requirements. These requirements may differ among the Faculties. Please refer to the Index for information specific to the various Faculties.

The Courses

An itv course is the full equivalent of the same course offered on campus. itv courses are either recorded live on campus or are offered as pre-recorded lectures. Students will complete the same assignments and examinations as the on-campus students, and in the same time period. All rights and responsibilities are the same as those that apply to on-campus courses. itv course sections are allotted the same support resources as those provided for on-campus sections.

Each itv course can count as credit towards a degree in the same way as the equivalent on-campus course. Generally speaking, appropriate itv courses successfully completed by Special students may be credited towards fulfillment of program requirements when the student is formally admitted to the degree or certificate programs. Students enrolled in a degree program at another institution may take itv courses as Special students and transfer earned credits to their home university by means of a Letter of Permission. (See p. 48.)

Technology Requirements

Students who choose to enrol in a television section and who live within the broadcast area of the cable systems in metropolitan Ottawa must have access to a television set, a cable television converter, and cable television service to view and/or record lectures. It is suggested that they have access to a VCR as well. Those living beyond the reach of these cable systems and viewing course lectures on videocassette, need access to a VCR and a television set to view lecture tapes. Further information is available in the *itv Brochure* from Instructional Television.

Associated Costs

The tuition for itv courses is identical to that for on-campus courses. Any other costs associated with credit courses such as textbooks, course manuals, course materials fees or lab fees are also the same. Additional costs may be incurred, for example, in the form of cable television charges, Tapes-to-You (TTY) services or off-campus examination charges. Students requiring the TTY Service should call (613) 520-4042 for further information about costs and registration deadlines. (See Fees, p. 60.)

Academic Advising

Academic advising is available to Special students through the School of Continuing Education by telephone and in person. Degree students must consult the Registrarial Services office of their Faculty for further information about advising. This service provides orientation to university courses, course selection information and degree admission requirements.

English Language Requirements

University policy governing English language requirements for non-native speakers applies to all **itv** courses available for credit. (See p. 31.)

Information about **Itv** is available in person, by telephone, and in the **itv** Brochure available from Instructional Television.

Academic Administration

Dean
G.S. Adam

Associate Dean
L.T. Librande

Secretary of the Faculty Board
To be announced

Assistant Dean
D. Saveland

Directory of Offices

Registrarial Services
318 Paterson Hall
Student Advising 520-7462
Student Records 520-7460

Office of the Dean
328 Paterson Hall
Dean 520-2355
Associate Dean 520-2354
Assistant Dean 520-7460

Applied Language Studies, I. Pringle, Director
215 Paterson Hall, 520-6612

Canadian Studies, P. Armstrong, Director
1206 Dunton Tower, 520-2366

Classics, R.L. Jeffreys, Chair,
2015 Dunton Tower, 520-2301

Comparative Literary Studies, R.M. Polzin, Director
1701 Dunton Tower, 520-2177

English Language and Literature, R.B. Lovejoy, Chair
1812 Dunton Tower, 520-2310

English as a Second Language,
see Applied Language Studies, 520-6612

French, Chair to be announced
1602 Dunton Tower, 520-2168

German, Chair to be announced
1315 Dunton Tower, 520-2115

History, G.F. Goodwin, Chair
400 Paterson Hall, 520-2828

Humanities, Director to be announced
520-2809

Institute for Interdisciplinary Studies,
J.A. Brook, Director
2216 Dunton Tower, 520-2368 or 520-3597
Child Studies, T. Daniels, Co-ordinator,
520-2368
Cognitive Science, J. Logan, Co-ordinator,
520-2368 or 520-2690
Directed Interdisciplinary Studies,
C. Gordon, Co-ordinator, 520-2368 or
520-2603

Environmental Studies, N. Doubleday,
Co-ordinator, 520-2368 or 520-2600, ext. 8370

Italian Studies, W. Anselmi, Chair
1315 Dunton Tower, 520-2108

Journalism and Communication
Journalism, P. Johansen, Director
346 St. Patrick's Building, 520-7404
Mass Communication, P. Attallah,
Associate Director
310 St. Patrick's Building, 520-7408

Linguistics and Applied Language Studies
J.M. Yalden, Chair
249 Paterson Hall, 520-2802

Philosophy, J. Leyden, Chair
2123 Dunton Tower, 520-2110

Religion, J.G. Ramisch, Chair
2121 Dunton Tower, 520-2100

Russian, A. Lewinson, Chair
3A38 Paterson Hall, 520-6646

Studies in Art and Culture, J. Shepherd, Director
423 St. Patrick's Building, 520-3993
Art History, R.J. Mesley, Assistant Director
423 St. Patrick's Building, 520-2342
Film Studies, Z. Pick, Assistant Director
423 St. Patrick's Building, 520-5606
Music, J. Giles, Assistant Director
A911 Loeb Building, 520-5770

Spanish, P.J. Roster, Chair
1419 Dunton Tower, 520-2109

Degree and Certificate Programs

Registrarial Services

Assistant Dean of Arts: D. Saveland
Student Advising: D. Faulkner, S. McCallum
Student Records: V. LeBlanc

The Registrarial Services provided by the Faculty of Arts are a source of general information on the academic programs within the Faculty of Arts and on the regulations that apply within the Faculty. Specific information about course content, subject matter, and the structure of Pass or Honours programs is obtainable from the academic departments within the Faculty.

The Faculty of Arts offers programs in five degrees and four certificates.

Bachelor of Arts and Bachelor of Arts with Honours (B.A.)

The three-year Pass B.A. program provides a liberal university education of value either as a general intellectual preparation for a great number of non-specialized careers, or as an introduction to subsequent specialized study.

The four-year program of the Honours B.A. provides more rigorous and extensive study in one or two

disciplines. The Honours degree is necessary for entry to certain fields of employment, and is a desirable preparation for graduate studies and professional training, including teaching.

Bachelor of Humanities (B.Hum.)

The four-year Honours program in Humanities is a highly prescribed and intensive course of study in the core disciplines of the liberal arts. In addition to the prescribed core curriculum, students may choose one of five concentrations: Liberal Arts, History, Philosophy, Literature, and Languages.

Bachelor of Journalism (B.J.)

The four-year Honours program is designed to prepare students for careers in the mass media. The program is offered by the School of Journalism and Communication.

Bachelor of Music (B.Mus.)

The four-year Honours program prepares students for graduate studies in musicology and ethnomusicology, and gives an essential background for careers in music librarianship, music administration, and teaching. The program is offered by the Music discipline of the School for Studies in Art and Culture.

Certificate in English Language and Composition (C.E.L.C.)

This is a 5.0-credit post-degree certificate intended primarily for practising teachers, to upgrade their knowledge of areas of language and of writing theory that underlie the new Ontario guidelines. It is also open to persons without a degree who hold a teaching certificate. The program is offered by the Department of English Language and Literature.

Certificate in French Language Studies (C.F.L.S.)

This is a 6.0-credit program designed to permit people who already have some knowledge of French to achieve a high level of proficiency in the language. The program should be of particular interest to mid- and senior-level public servants, business people, teachers and other professionals as well as members of the general public. The program is offered by the Department of French.

Certificate in French Translation Studies (C.F.T.S.)

This is a 6.0-credit program designed to permit students to acquire and improve skills in translation from English to French. While it is not a professional program, this certificate should meet the needs of those who are occasionally called upon to translate in their work environment. The program is offered by the Department of French.

Certificate in the Teaching of English as a Second Language (C.T.E.S.L.)

This is a 5.0-credit program in the theory and practice of teaching English as a second language. The program is offered by the Department of Linguistics and Applied Language Studies.

Part-Time Study

Part-time study is a viable method of attaining a degree in the Faculty of Arts.

Part-time students who wish to limit their studies to evening and summer times should note that the following departments teach a range of courses in the evening and during the summer that will permit students to complete a major in their discipline.

Art History
Canadian Studies
Classics
English Language and Literature
Film Studies
French
German
History
Italian
Linguistics
Music
Philosophy
Religion
Russian
Spanish

Students have the choice between full- and part-time registration and may freely alternate between the two.

Students wishing to pursue an Honours degree on a part-time basis are urged to consult with the appropriate department(s) about the scheduling of courses.

Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about itv refer to p. 67 of this Calendar.

New Regulations Governing Academic Standing and Graduation

New regulations governing academic standing and graduation were introduced September 1, 1989 for all students in the Faculties of Arts and Social Sciences.

Students newly admitted to the faculties are governed by these regulations. Students continuing in degree programs in Arts and Social Sciences to which they were admitted prior to the 1989-90 Academic Year will be evaluated under the regulations for standing and graduation in effect at the time of their admission.

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1. Administration of the Regulations

1.1 General Administration

The regulations on the following pages apply, except when noted, to all degree and certificate programs of the faculties of Arts and Social Sciences and are administered by the Registrarial Services office of each faculty and the student's school or Major department. Students should refer to the listings for the programs administered by each faculty. Each Registrarial Services office provides an Academic Advising Service, and students are urged to seek advice on all questions about the regulations, and in particular before taking any action affecting promotion and probation, withdrawal, transfer of credit, review of grades, and change of Major or degree program.

1.2 Student Responsibility

Students are responsible for knowing and complying with the regulations and for registering in the courses required to fulfil degree requirements. Specific written permission must be obtained for exceptions to the regulations. Permission granted by a department must be confirmed by the appropriate Registrarial Services office.

1.3 Requests and Petitions

Requests and petitions are made in writing to the student's Registrarial Services office, if possible on the forms provided. Students should discuss their requests or petitions with an adviser. The circumstances of any request or petition are held in the strictest confidence.

Decisions on requests are made by the student's Registrarial Services office according to guidelines set by the Joint Committee on Admissions and Studies. Students may have such decisions reviewed by petitioning the Committee.

2. Admission, Readmission, and Degree Transfer

2.1 New Students

Detailed requirements for initial admission to the Faculties' degree and certificate programs are given on p. 31.

2.2 Readmission

Students in the following categories are required to apply for readmission before registration. Readmitted students are governed by the regulations in effect at the first registration following readmission.

- (a) Students who after graduation wish to pursue a further degree;
- (b) Students who have been absent from the University for two consecutive Fall/Winter sessions and the intervening Summer session;
- (c) Students who have been admitted to a degree program and have taken courses at any other post-secondary institution since their last registration at Carleton (except students studying on a Letter of Permission from the appropriate Registrarial Services office);
- (d) Students who have been debarred.

Note:

Applications for readmission (obtainable from the Office of Admissions) must be filed before June 30 for the Fall/Winter session and before April 1 for the Summer session.

2.3 Change of Degree Program

Applications to change degree programs must be made to the Office of Admissions by June 30 for the Fall/Winter session, by December 1 for Winter term of the Winter session, and by April 1 for the Summer session.

Students who are transferring are governed by the regulations in effect at the first registration following the transfer.

Note:

Transfer applications received during the month of July may not be processed in time for the student to take advantage of early registration.

3. Registration

3.1 Registration

Students must complete their registration, including fee payment arrangements, during the official registration periods shown for the session or term in the schedule for the Academic Year on p. 10.

3.2 Late Registration

Registration during the late registration period incurs a late registration charge. Registration is not permitted after the late registration period.

Students should note that mere attendance in a course does not constitute registration in that course.

3.3 Credit Value

Unless otherwise indicated, courses in the Faculties are of one full credit, indicated 1.0 on all records documents. Courses marked ★ are half-credits, indicated 0.5.

3.4 Definition of "Year"

Undergraduate students in the Faculties of Arts and Social Sciences (other than those admitted to Qualifying-University year) are given "Year" standing according to the number of credits completed with passing grades and counting towards the degree or certificate. The categories are as follows:

First Year:

Fewer than 4.0 credits successfully completed and counting towards the degree;

Second Year:

4.0 through 8.5 credits successfully completed and counting towards the degree;

Third Year:

9.0 credits through 13.5 credits successfully completed and counting towards the degree;

Fourth Year:

14.0 or more credits successfully completed and counting towards the degree. Minimum GPAs are also required for entry and continuation in Fourth year (see 4.5).

Students admitted to Qualifying-University year will be permitted to register with First-year standing upon successful completion of at least 4.5 credits towards the Qualifying-University year requirements, with the understanding that all outstanding Qualifying-University year requirements must still be met prior to graduation, in addition to the usual degree requirements.

3.5 Course Load

In the Fall/Winter session, in all programs but Journalism, students may register in up to five half-credits per term or equivalent, audited courses included. The normal course load in Third-year Journalism is 5.5 credits.

In the Summer session, students may register in a maximum of two half-credits or equivalent per term, including audited courses.

3.6 Course Overload

Permission of the student's Registrarial Services office is required to register in a course overload. Such permission will be available only to students whose CI is 7.00 or higher (see 5.4 for the definition of the CI). The maximum load permitted is six half-credits per term in the Fall/Winter Session and three half-credits per term in the Summer session.

3.7 Auditing

Students may, with the instructor's permission, register in some courses as auditors. (See p. 47 for details.) Auditors receive no grade and no credit for the course. No change from credit to audit or from audit to credit will be permitted beyond the last day for course changes in any course. Auditors are not permitted in some courses; in particular, students are not permitted to audit courses with limited enrolment.

3.8 Change of Course and Section

Changes of course, or of section within a course, must be done through the telephone registration system on or before the deadlines specified on p. 10.

3.9 Withdrawal

Students withdrawing from courses or from their entire program must phone the telephone registration system on or before deadlines specified on p. 10. Students receiving scholarships or financial assistance should consult the Awards Office before dropping courses.

For Summer session 1996 see the Summer Session Supplement.

For Summer session 1997 see the Academic Year p. 10.

Consult p. 60 for the financial implications of withdrawal.

Note:

The onus for officially withdrawing by the telephone registration system rests solely with the student. Ceasing to attend lectures or informing the instructor does not constitute withdrawal, and will result in an Abs or FNS grade.

3.10 Courses from Other Faculties and Schools

Students must consult the Registrarial Services office of the Faculty in which they are registered and the Department(s) of their Major about registering in courses in Engineering, Industrial Design, and Architecture. Science and interdisciplinary courses are generally acceptable. Professional courses in Engineering, Industrial Design and Architecture are generally not acceptable. Performance courses in Music are open only to students in certain Music programs. Professional courses in Journalism are not acceptable options in the B.A. program. A limited number of Architecture courses are permitted in certain programs. Students who wish to take courses in Engineering, Industrial Design, and Architecture which are not part of their program or which are not listed as being open to students in the Faculties of Arts and Social Sciences, must obtain prior permission from the Department(s) of their Major, and from the unit offering the course.

3.11 Residence Requirement

Degree Programs:

To obtain a degree from Carleton University, students must present a minimum of 5.0 credits taken at Carleton and counting toward the degree. These 5.0 credits must include credits in the major as follows:

Pass: 3.0 credits;

Combined Pass: 3.0 credits in one Major and 2.0 credits in the other;

Honours: 4.0 credits including the Honours thesis or comprehensive examination where it is a requirement of the program;

Combined Honours: 3.0 credits in one Major and 2.0 credits in the other including the Honours thesis or comprehensive examination where it is a requirement of the program.

Departments may require that certain of these credits be at the senior level.

Certificate Programs

To obtain an undergraduate Certificate from Carleton University, students must present a minimum of 4.0 credits taken at Carleton, including all core courses.

Multiple Undergraduate Degrees

Students admitted to a second undergraduate program must, in addition to meeting the requirement described above, present a minimum of 5.0 credits for the new degree program (4.0 in a certificate program) taken at Carleton and not counted for any previous program. These must include 3.0 credits in the Major of the new degree program (4.0 in an Honours B.A. for students whose previous degree was not completed at Carleton). Variations from this pattern may, in very exceptional circumstances, be approved by the Joint Committee on Admissions and Studies. Students should consult their Registrarial Services office.

3.12 Transfer of Credit

Before taking courses at another university, students must obtain a Letter of Permission from their Registrarial Services office.

Students who take courses without obtaining a Letter of Permission will not be granted credit for the courses. Permission obtained from an instructor or from a department does not obligate the University to accept a credit.

Eligibility

To be granted permission, students must have completed at Carleton a minimum of 4.0 credits counting towards their degree program and be in Good Standing and be declared in a Major. (See also 3.11 Residence Requirement.)

Maximum Load

Subject to the regulations of the host university, a Carleton student studying on a Letter of Permission may take a maximum of 2.0 credits in the Summer and 5.0 credits in the Fall/Winter session.

Transfer Credit Grading

(a) Grades for successfully completed courses taken on Letters of Permission will not be transferred.

(b) The Major department or the student's Registrarial Services office may require that the student obtain a minimum grade higher than the passing grade. The student shall be notified of such a requirement when the Letter of Permission is issued. Should the student pass the course but fail to meet this minimum grade, credit will not be transferred.

(c) Failure on a course taken elsewhere will be recorded with the appropriate credit value, and will be taken into account in all assessments of eligibility to register and graduate, will count as an attempt, and

will be included in the calculation of the CI.

(d) If a student writes a supplemental examination in a course taken on a Letter of Permission, both the initial failure and subsequent pass or failure will be recorded; each will count as an attempt and any failures will be included in the calculation of the CI (see 5.5).

Reporting

(a) If students find it necessary to have their Letter of Permission amended they must notify their Registrarial Services office prior to completion of the course.

(b) Students are required to present to Carleton an official transcript showing results in courses taken on a Letter of Permission. If the transcript is not forthcoming, the course will be awarded a failing grade.

(c) Students completing a final credit for a degree on a Letter of Permission during the Fall/Winter session are warned that transfer grades may not be available in time for Spring graduation.

Application and Fees

(a) Applications for a Letter of Permission must be obtained from the student's Registrarial Services office. The application form must be returned to that office accompanied by a photocopy of the official description of the course.

(b) A processing fee is charged for Letters of Permission. Students should note that this is a per-course, not a per-credit, fee. (See p. 59.)

(c) Applications for a Letter of Permission must be made by November 15, for January registration; March 31, for Summer registration; and July 31, for September registration.

3.13 Exchange Agreements

Students in Good Standing (see 5.2) may be eligible to study elsewhere on one or more of the many exchange agreements available to undergraduate students.

University of Ottawa Exchange Agreement

Carleton undergraduate students may register to take courses at the University of Ottawa to be credited to their Carleton degree. The following regulations apply:

1. Students must be registered in a degree program at Carleton, have completed successfully a minimum of four credits toward that degree and be in Good Standing and be declared in a Major as defined in 5.2.

2. Only courses to be credited as part of degree requirements at Carleton may be taken under the terms of the exchange.

3. At any time, the cumulative total of courses taken by the student at Carleton and counting toward the degree must be greater than the total number of courses taken and proposed at the University of Ottawa and counting toward the degree.

4. Courses taken under the Exchange Agreement will not satisfy the residence requirement for students' degree and Major programs (3.13).

5. Grades for courses taken on the Exchange Agreement will be reported on the Carleton transcript and will be included in the CI and in the GPAs calculated.

Students should consult their Registrarial Services office for application forms and information on procedures and deadlines.

Students should note that space in courses may be limited and therefore applications should be filed as early as possible.

Students withdrawing from an exchange agreement course must notify both Universities, or a grade of Abs or FNS may be recorded. There may be financial implications.

Studies in Canada and Abroad

Eligible students may take advantage of a number of Exchange Agreements and Study-Abroad programs. At present agreements exist with universities in the United States, Great Britain, France, Germany, Spain, Hungary, Poland, Russia, China, Japan, Latin America and Africa. Interested students should consult Carleton International, 1506 Dunton Tower (520-2519) for further information. The deadline for application is November 30.

3.14 Student Records

Incorrect address information will delay the receipt of awards, and notification of changes in academic status. Addresses must include postal codes. Students must notify their Registrarial Services office immediately of any change in:

- (a) permanent or home address (used for registration information);
- (b) local address (used for all mail during the academic session);
- (c) telephone number for permanent address and for local address;
- (d) name.

3.15 Challenge for Credit

Degree Programs

A student with significant work-related experience and non-academic learning equivalent to a specific Carleton course may receive credit for that course through the Challenge for Credit procedure. If the University is satisfied that a student is adequately grounded in a course, credit may be granted by examination, without the normal requirements of attendance and instruction. Not all departments participate in this procedure. There is a charge for each challenge. A student may present no more than 5.0 challenged credits in a degree program. Students must enquire at their Faculty Registrarial Services office.

Credits obtained by challenge may be not used to satisfy the Residence Requirement for the student's degree program and Major discipline (see 3.13).

Certificate Programs

A student may challenge up to 1.0 credit in an undergraduate Certificate. Students must enquire at their Faculty Registrarial Services office.

4. Declaring a Major Discipline

Every student in the Faculties of Arts and Social Sciences is required to offer some level of special-

zation in one or two disciplines. The discipline of specialization is called the Major discipline.

4.1 Major Disciplines Available

The following table illustrates the choice of specialization available in the Faculties of Arts and Social Sciences. Some majors are offered as professional degrees. Most are available as single or combined majors in the Pass and/or the Honours B.A. degree program.

Code

P: Pass

PC: Pass Combined

H: Honours

HC: Honours Combined

Conc: Concentration

Others: as noted (Degrees, Certificates, etc.)

Architecture	PC	HC		
Anthropology	H	HC		
Art History	P	PC	H	HC
Biology	P	PC	H	HC
Business	B.Com.		B.I.B.	
Canadian Studies*	P	PC	HC	
Central/East European and Russian-Area Studies	H	HC		
Child Studies	P	H		
Classical Civilization	P	PC	H	HC
Cognitive Science	H			
Comparative Literary Studies	P	PC	H	HC
Computer Mathematics		P	H	
Criminology and Criminal Justice	Conc.**			
Directed Interdisciplinary Studies	P	H		
Economics	P	PC	H	HC
English	P	PC	H	HC
English Language and Composition	C.E.L.C.			
Teaching English as a Second Language		C.T.E.S.L.	H	
Environmental Studies	P	H		
Film Studies	P	PC	H	HC
French	P	PC	H	HC
French Language Studies		C.F.L.S.		
French Translation Studies		C.F.T.S.		
Geography	P	PC	H	HC
Geographic Information Processing	Conc.***			
German	P	PC	H	HC
German Studies	H			
Greek	P	PC	H	HC
History*	P	PC	H	HC
Humanities	H	HC		
Italian Studies	P	PC	H	HC
Journalism	HC	B.J.		
Latin	P	PC	H	HC
Law**	P	PC	H	HC
Law Enforcement	C.L.E.S.			
Linguistics*	P	PC	H	HC
Mass Communication	P	PC	H	HC
Mathematics	P	PC	H	HC
Music	P	PC	H	HC
	B.Mus.			
Operations Research	H			
Philosophy*	P	PC	H	HC
Political Science*	P	PC	H	HC
Population Studies	Conc.****			

Public Administration* B.P.A.

Public Service Studies C.P.S.S.

Psychology*,** P PC H HC

Religion P PC H HC

Russian P PC H HC

Social Work B.S.W.

Sociology H HC

Sociology/Anthropology*,** P PC H HC

Spanish P PC H HC

Statistics P PC H HC

Women's Studies PC HC

* "Mention: français", (see 7.7)

**A concentration in Criminology and Criminal Justice is offered in a Pass or Honours program in conjunction with specialization in Law, Psychology, or Sociology/Anthropology, or any combination of two of these three disciplines.

*** A concentration in Geographic Information Processing is offered in conjunction with an Honours program in Geography.

****A concentration in Population Studies is offered in conjunction with an Honours program in Sociology.

4.2 Declaring a Major Discipline

(a) Disciplines Offered as Separate Degrees

Students normally apply to be admitted directly to the first year of disciplines offered as separate degrees (B.Com., B.Hum., B.I.B., B.J., B.Mus., B.P.A. and B.S.W.). Students may apply to transfer into or out of these programs, but as most of these programs are subject to enrolment limitations, entry will be competitive. Consult the appropriate departmental entries for further details. The transfer procedure is described in section 2.3.

(b) Disciplines Offered as Majors in the B.A. Programs

Although not required to do so, students admitted to the Pass B.A. program may declare their proposed major or specialization(s) on admission to First year, but in any case they are required to declare their major discipline(s) prior to registration in Second year. Students who have not done so must obtain special permission from their Registrarial Services office to register.

Students admitted to the Honours B.A. program must declare their major specialization(s) by the time of their first registration.

Students in the Third or Fourth year of a Pass or Honours B.A. program who have not declared a Major discipline will be denied permission to register. Where their performance is inadequate to permit them to declare any Major, they will be debarred from the university.

Students may apply to declare/change their Major discipline at their Registrarial Services office and should consult the office for application deadlines.

(c) Interdisciplinary Degree Programs

Students should apply for admission to these degree programs as early as possible and certainly by the end of first year (transfer students can apply at any time before completing their final 5.0 credits, but may have to make up credits). The application form, and, in the case of Directed Interdisciplinary Studies, a

proposed program of study must be submitted to the appropriate co-ordinator. For Directed Interdisciplinary Studies special application forms are required; they are available from the Institute for Interdisciplinary Studies office and must be submitted before July 1st for September entrance, November 1 for January entrance. General regulations for Pass or Honours degree programs, as appropriate, apply to interdisciplinary degree programs.

For details of interdisciplinary degrees offered and requirements of each, see the Institute for Interdisciplinary Studies section of the Calendar, p. 330.

4.3 GPA for Entry and Continuation in a Major

The GPA for entry into and continuation in a major discipline will be calculated over all successful attempts in courses in that discipline. Where the record includes supplemental or grade-raising examinations and/or repeated courses, only the last attempt will be included in this GPA. Forfeited courses will be excluded from the calculation.

This GPA will be calculated to one decimal place and will not be rounded.

Some programs have special conditions for entry and continuation. (See 4.4 and 4.5).

4.4 Standards for Declaring a Major

After admission to the Pass B.A. program, to be accepted into a major discipline in a program not subject to Senate-approved enrolment limitations, students entering Second or Third year must have completed at least one course leading to the major discipline and have achieved a GPA of 4.0 or better in that Major discipline (see 4.3).

After admission to an Honours program, to be accepted into a major discipline not subject to Senate-approved enrolment limitations, students must have completed at least one course leading to the major discipline and have achieved a GPA of 6.0 or better in that major discipline. Students entering Fourth year must have a GPA of 6.5 in the Major discipline (see 4.3).

Students declaring a Combined Major must meet the foregoing requirements in each proposed major discipline.

Special standards apply to programs with Senate-approved enrolment limitations. Currently the programs subject to limitations are Business, Criminology and Criminal Justice, Geographic Information Processing, Journalism, Mass Communication, Public Administration and Social Work. Consult the departmental entries for these disciplines for details of the standards that must be met by students wishing to qualify for consideration.

4.5 Continuation in a Major

Students pursuing a degree with a Combined Major must fulfil the requirements in each individual Major discipline.

In programs with enrolment limitations, however, special standards for continuation may apply. Consult the departmental calendar entries for Business, Criminology and Criminal Justice, Journalism, Mass Communication and Public Administration.

Pass B.A. Program

To continue in their Major discipline(s), students in the Pass B.A. program must maintain a GPA of 4.0 or better in the Major discipline(s).

Honours Programs

To continue in their Major discipline(s), students in the Second or Third year of Honours programs must maintain a GPA of 6.0 or better in the Major discipline(s). To proceed into and continue in Fourth year, students in Honours programs must have and maintain a GPA of 6.5 or better in the major discipline(s).

4.6 The Honours Paper or Research Essay

General

Although the scope of the Honours paper or research essay should not exceed what the student can reasonably expect to complete within an academic session, up to two re-registrations are permitted. If the honours paper or research essay is not completed within three consecutive sessions, a grade of *F* will be assigned.

The First re-registration is optional. Students should note, however, that they are not eligible for supervision or library privileges, may not submit an Honours paper or essay for grading, and may not graduate if they are not registered.

The Second re-registration is compulsory for students whose honours papers or research essays are still outstanding at the beginning of the third session. To avoid such re-registration students must either:

- (a) withdraw from the Honours program, notifying their Registrarial Services office of their intention in writing, no later than the last date for late registration; or
- (b) notify their Registrarial Services office of intention to complete the Honours program by means of appropriate alternative courses approved by the Honours supervisor.

For the initial registration, the fee per credit applies. For each re-registration the fee per half credit applies.

Deadlines for Submission of the Honours Paper or Research Essay

The deadline for submission of the Honours Paper or Research Essay is the last day for handing term assignments for the session of registration, subject to any earlier course deadline (see the schedule for the Academic Year, p. 10).

Students who are in their initial registration or their optional first re-registration, and who have not applied to graduate, may submit the Honours Paper or Research Essay no later than the last day of the examination period for the session of registration (see the schedule for the Academic Year, p. 10).

If the Honours Paper or Research Essay is not submitted by the appropriate deadline, a notation of *IP* will be assigned for those students eligible to re-register. A grade of *F* will be assigned for those students not eligible to re-register.

Withdrawal

Students may withdraw from the Honours paper or research essay up to the last date for withdrawal from

full courses in the session. Students who withdraw during their initial registration or first re-registration will retain Honours status. Students who withdraw from the second re-registration will forfeit Honours status, unless they simultaneously transfer to another course or courses that meet Honours requirements. Students who withdraw from the Honours program will automatically be withdrawn from the Honours paper or research essay.

Reinstatement

Students who fail to complete the Honours paper or research essay successfully within the three consecutive terms permitted will forfeit Honours status, but may apply for reinstatement in the Honours program, to the Joint Committee on Admissions and Studies. Reinstatement is not guaranteed. The department may require such students to begin a new project. Reinstated students will pay a full registration fee.

5. Academic Standing

5.1 Standing in Courses

Standing in courses is shown by alphabetical grades as described on p. 50. Supplemental examinations are graded by the same scale.

(a) In addition the following symbols apply in the Faculties of Arts and Social Sciences:

Abs (Absent)

Absent from formally scheduled final examinations where the necessary term work has been completed. (This grade bears academic penalty in that it is interpreted as an unsuccessful attempt.)

Aeg (Aegrotat)

Pass standing is granted on the basis of course work when no further assessment is considered feasible. Aegrotat is granted only by approval of the Joint Committee on Admissions and Studies in response to a student's application. (See also 6.3.)

Ch (Challenge)

Credit granted under the Challenge for Credit policy.

Def (Deferred)

Final grades deferred for personal or medical reasons with approval of the Joint Committee on Admissions and Studies. This notation must be replaced by a grade within the prescribed time period or it will revert to a failure with no academic credit.

F (Failure)

Failure, no academic credit.

FNS (Failure, no supplemental)

Failure without access to Supplemental Examinations. No academic credit.

IP (In Progress)

Honours thesis or essay is "In Progress". (See 6.5).

Sat (Satisfactory)

Satisfactory.

Uns (Unsatisfactory)

Unsatisfactory.

(b) The following symbols serve to identify other courses which do not count towards a degree in the Faculties of Arts and Social Sciences.

Aud (Audit)

Audit indicates courses not taken for academic credit.

ETD (Extra to Degree)

A course passed prior to graduation but not counted towards the degree.

FORFEIT

This designation identifies courses for which credit is not given as a result of regulatory decisions.

NCD (No Credit for Degree)

A course not acceptable for credit towards the current degree.

5.2 Academic Standing

Performance of all students will be evaluated regularly to determine whether they are meeting the standards prescribed for continuing in the program. Performance will be classified according to the following three categories:

Good Standing

Students in Good Standing fully meet the academic standards prescribed for their degree program and are eligible to continue in that program (see 5.7 and 5.8.)

Probation

Students placed on Probation are deficient with respect to the academic standards prescribed for their degree program. They may continue in their degree program but must clear Probation at the time of the next Academic Standing decision (see 5.7 and 5.8.)

Debarred from Further Study

Students whose performance falls below a minimum standard will be debarred. Students who are debarred will not be allowed to register at Carleton University (see 5.7 and 5.8.)

5.3 Schedule of Academic Standing Evaluations

The first evaluation of Academic Standing will take place at the end of the session of Fall/Winter registration in which students have accumulated a total of at least four attempts. Students admitted on the basis of previous post-secondary study may have an academic standing decision made at the point of their admission. In such cases, this decision is considered the first evaluation of academic standing.

Subsequent evaluations will take place at the end of each successive Fall/Winter registration, providing that students have made at least two attempts since the previous Academic Standing decision.

Students who have been granted Deferrals in one or more courses will have their Academic Standing decision postponed to the end of the Summer session. Grades earned in the Summer Session will not affect Academic Standing decisions postponed because of Deferral.

5.4 Continuation Index

Academic Standing decisions will be based in part on the CI.

The CI is calculated by dividing the total grade points accumulated over all attempts by the total number of attempts. The calculation is carried to two decimal places without rounding.

Since the passing grades of *Ch*, *Sat* and *Aeg* do not generate grade points, courses with these grades and the attempts associated with them will be ignored in the calculation of the CI, although they will continue to count toward the total attempts allowed in the degree or certificate program. Music 30.192★, 30.193★, 30.292★, 30.293★, 30.392★, 30.393★, 30.492★ and 30.493★ will not, however, count toward the total attempts allowed in the B.Mus. degree program. Audited courses will be excluded from both calculations.

5.5 Attempts

Every grade which appears on the official transcript constitutes an attempt. Such grades include not only those for successfully completed courses but also those for all failed, forfeited, replaced and repeated courses, as well as grades received from supplemental or grade-raising examinations.

Audited courses and courses from which a student withdraws in good standing are not considered to be attempts.

Attempts are weighted according to the credit value of the course.

5.6 Limit on Attempts

Students in the Pass B.A. program may not accumulate more than 23 attempts in the process of earning their degree. Students who accumulate more than 8 unsuccessful attempts will be debarred.

Students in Honours programs may not accumulate more than 26 attempts in the process of earning their degree. Students who accumulate more than 6 unsuccessful attempts (6.5 in Journalism programs) must withdraw from Honours and may be debarred. (See 5.8)

Students in 5.0 credit certificate programs may not accumulate more than 7 attempts in the process of earning their certificate. Similarly, students in a 6.0 credit certificate program may not accumulate more than 8 attempts. Students in certificate programs who accumulate more than 2 unsuccessful attempts will be debarred.

5.7 Academic Standing in the Pass B.A. Program

Good Standing

Students in the Pass B.A. program will be in Good Standing if at the time of any Academic Standing decision:

- (a) their CI over all attempts is 4.00 or better;
- (b) they have accumulated no more than 23 attempts including current registration, (i.e., they have no more than 8 unsuccessful or forfeited attempts);
- (c) the GPA in each major discipline is 4.0 or better.

Probation

Students in the Pass B.A. Program will be placed on Probation if, at the time of any Academic Standing decision, their CI is less than 4.00 but greater than or equal to the value in the table in Section 5.9 which corresponds to the total number of attempts in their academic record. Students in this position are eligible for Probation only if they have satisfied the appropriate regulations governing standing in a major.

Students placed on Probation will immediately forfeit all passed courses with grades below *C* accumulated during the evaluation period which resulted in Probation.

Students on Probation must clear probation at the time of the next Academic Standing decision by achieving a CI of 4.00 or better over all attempts accumulated during the period of Probation. Students failing to meet this standard will be debarred.

The CI for all subsequent decisions concerning academic standing and graduation will be calculated over the attempts accumulated after being placed on Probation. Attempts accumulated prior to the Probation decision, however, will continue to be counted in the total allowed for the degree, as will forfeited courses.

Students may not go on Probation more than once. If the CI falls below 4.00 a second time, the student will be debarred.

Debarred from Further Study

Students in the Pass B.A. program will be debarred if:

- (a) at the time of any Academic Standing decision, their CI is less than the value in the Table in Section 5.9 corresponding to the number of attempts in their record;
- (b) having been placed on Probation, they fail to achieve Good Standing at the time of the next Academic Standing decision;
- (c) having cleared Probation, they subsequently fail to maintain Good Standing;
- (d) they fail to qualify for graduation within 23 attempts, including current registration, or they have more than 8 unsuccessful or forfeited attempts;
- (e) on entering Second year, they have not successfully declared a Major and have failed to qualify for permission to register as an Undeclared Major;
- (f) on entering Third Year, they have not successfully declared a Major;
- (g) having declared a Major discipline, they fail to maintain standing in that major after First year and do not qualify to declare another in its place, and have not been granted special permission to register undeclared (see 4.2).

5.8 Academic Standing in the Honours B.A., B.Com., B.Hum., B.I.B., B.J., B.Mus., B.P.A. and B.S.W. Programs

Good Standing

Students in Honours programs will be in Good Standing if at the time of any Academic Standing decision:

- (a) their CI over all attempts is 6.00 or better;
- (b) they have accumulated no more than 26 attempts including current registration (i.e., they have no more than 6 unsuccessful or forfeited attempts);
- (c) in Second or Third year, they have a GPA of 6.0 or better in each major discipline;

(d) in Fourth year, they have a GPA of 6.5 or better in each major discipline.

Probation

Students in Honours programs will be placed on Probation if, at the time of any Academic Standing decision, their CI is less than 6.00 but greater than or equal to the value in the table in Section 5.9 which corresponds to the total number of attempts in their academic record. Students in this position are eligible for Probation only if they have satisfied the appropriate regulations governing standing in a major.

Students whose performance does not qualify for Good Standing in Honours but does meet or exceed the minimum standard for Good Standing in a Pass B.A. program may apply to transfer to that program. If their transfer is accepted, they will not be placed on Probation but will qualify for Good Standing.

Students who are placed on Probation will immediately forfeit all passed courses with grades below C+ accumulated during the evaluation period which resulted in Probation.

Students who are placed on Probation must clear Probation at the time of the next Academic Standing decision by achieving a CI of 6.00 or better over all attempts accumulated during the period of Probation.

The CI for all subsequent decisions concerning Academic Standing and graduation will be calculated over the attempts accumulated after being placed on Probation. Attempts accumulated prior to the Probation decision, however, will continue to be counted in the total allowed for the degree, as will forfeited courses.

Students may not go on Probation more than once. If the CI falls below 6.00 a second time, students will be debarred.

Students who fail to clear Probation at the time of the next Academic Standing decision and whose performance during the Probation period nonetheless meets or exceeds the minimum required for Good Standing in the Pass B.A. program may apply to transfer to that program. If their transfer is accepted, forfeited courses with grades of C or C-accumulated during the evaluation period which resulted in Probation will be restored and students will be placed in Good Standing in the Pass B.A. Program. If they fail to maintain Good Standing thereafter, they will be debarred.

Students who fail to clear Probation at the time of the next Academic Standing decision and whose CI based on performance during the Probation period is below the minimum required for Good Standing in the Pass B.A. program, will be debarred.

Debarred from Further Study

Students in Honours programs will be debarred if:

- (a) at the time of any Academic Standing decision, their CI would lead to debarment if they were in the Pass B.A. program;
- (b) having been placed on Probation, they fail to achieve Good Standing at the time of the next Academic Standing decision;
- (c) having cleared Probation, they subsequently fail to maintain Good Standing;
- (d) they fail to qualify for graduation within 26 attempts including present registration (i.e., they have

more than 6 unsuccessful or forfeited attempts;

(e) on entering Second year, they have not successfully declared a Major and have failed to qualify for permission to register as an Undeclared Major;

(f) on entering Third year, they have not successfully declared a Major discipline;

(g) having declared a Major, they fail to maintain standing in that Major and do not qualify to declare another in its place.

5.9 Table of Minimum CIs for Probation

TOTAL ATTEMPTS	B.A. PASS	HONOURS B.A., B.Mus., B.S.W.
4.0	2.00	4.50
4.5	2.00	4.50
5.0	2.00	4.50
5.5	2.10	4.55
6.0	2.20	4.60
6.5	2.30	4.65
7.0	2.40	4.70
7.5	2.50	4.75
8.0	2.60	4.80
8.5	2.70	4.85
9.0	2.80	4.90
9.5	2.90	4.95
10.0	3.00	5.00
10.5	3.10	5.05
11.0	3.20	5.10
11.5	3.30	5.15
12.0	3.40	5.20
12.5	3.50	5.25
13.0	3.60	5.30
13.5	3.70	5.35
14.0	3.80	5.40
14.5	3.90	5.45
15.0	4.00	5.50
15.5	4.00	5.55
16.0	4.00	5.60
16.5	4.00	5.65
17.0	4.00	5.70
17.5	4.00	5.75
18.0	4.00	5.80
18.5	4.00	5.85
19.0	4.00	5.90
19.5	4.00	5.95
20.0	4.00	6.00
20.5 or more	4.00	6.00

For any specified number of attempts, a CI less than the tabled value means that the student will be debarred from further study.

5.10 Readmission after Debarment

After a two-year absence from post-secondary studies, students who have been debarred may petition the Joint Committee on Admissions and Studies for readmission to the University. Each case will be considered individually on its merits and readmission is not guaranteed.

5.11 Accelerated Progress

Students admitted to Qualifying-University year may have some or all of the courses taken in Qualifying-University year count toward the degree if they:

- (a) have completed at Carleton one year's full-time study;

- (b) have no failures or grade-raising examinations on their record; and
- (c) present a GPA of 7.0 or better on 5.0 credits or a total of 35 grade-points.

6. Examinations

General regulations on examinations are on p. 50. In addition the following regulations apply to students in the Faculties of Arts and Social Sciences.

6.1 Eligibility

- (a) No student may write supplemental and/or grade-raising examinations in more than two credits in any academic session;
- (b) Students on Probation may not write supplemental or grade-raising examinations.

6.2 Supplemental Examinations

Supplemental examinations are available in all undergraduate courses with written final examinations for those undergraduate students who are in Good Standing and have not been disqualified from such by receiving the grade of *FNS* or *Abs*.

Both the initial failure and the supplemental grade are included in the calculation of the CI. Only the last attempt, if successful, will be included in the calculation of the GPA in the Major discipline. If the second attempt is unsuccessful, neither attempt will be included in the calculation of the GPA.

Students must obtain an application form at their Registrarial Services office and should check application deadlines under Academic Year, p. 10.

6.3 Deferred Examinations and Final Papers

Students who are unable to write a final examination or complete a final paper because of illness or other circumstances beyond their control or whose performance on an examination has been impaired by such circumstances may *apply within 14 days* to the Registrarial Services office for permission to write a deferred examination or extend a term paper deadline. Permission can be granted only if the absence is fully and specifically supported by a medical certificate or other documents.

Deferred examinations are not granted to students who make travel plans that conflict with the examination period.

Students who have been granted Deferrals in one or more Fall/Winter courses will have their Academic Standing decision postponed to the end of the Summer session. Grades earned in the Summer Session will not affect Academic Standing decisions postponed because of Deferral.

Application for Aegrotat standing (*Aeg*) must be made to the Registrarial Services office, and will be granted in exceptional circumstances only where no other assessment is considered feasible and only if term work has been of high quality. *Aeg* indicates only a passing standard.

6.4 Grade-Raising Examinations

Grade-raising examinations will not normally be available in courses without written final examination. No more than 3.0 credits' worth of grade-raising examinations may be written in any degree program.

While both grades will appear on the transcript, the grade awarded as a result of the grade-raising examinations will be considered to be the final grade whether it is higher or lower than the original grade. Both grades, however, will be included in the calculation of the CI. Only the last attempt, if successful, will be included in the calculation of the GPA in the major discipline. If the second attempt is unsuccessful, neither attempt will be included in the calculation of the GPA.

Students must apply at their Registrarial Services office within the deadlines specified under Academic Year, p. 10.

6.5 Review of Grades

Students wishing to receive a review of a final grade must apply to their Registrarial Services office within the deadlines specified under Academic Year, p. 10. A review may raise or lower a grade, or leave it unchanged. Students awaiting the outcome of a review must still apply for any supplemental examination by the prescribed deadline.

The following procedures apply:

1. A review of grade is available to all students in all assignments and examinations. Reviews are conducted by the instructor assigned to the course.
 - (a) A review of final grade is limited to final examinations and final term papers returned after the last day of classes. Students must apply at their Registrarial Services office within the deadlines specified under Academic Year, p. 10.
 - (b) Students must request a review of other assignments and tests by contacting the instructor directly within 14 days of the return of the graded assignment, test or examination.
2. An *appeal* of a grade may be made to a Chair/Director or Dean when a student specifies reasons suggesting uncorrected error in the grade assigned by an instructor. The reconsideration of the written work in the course will be assigned by the Chair/Director to at least one qualified reader.

The appeal is specific to the grade on a given test/examination or paper, and more than one assignment may be appealed by a student within 14 days of the result.

6.6 Repeated Courses

Students may repeat a course for which they have received a passing grade. The grade awarded on the repetition will be considered to be the final grade whether higher or lower than the original grade. Both grades, however, will be included in the calculation of the CI. Only the last attempt, if successful, will be included in the calculation of the GPA in the major discipline. If the second attempt is unsuccessful, neither attempt will be included in the calculation of the GPA.

7. Graduation

7.1 Application to Graduate

Completed applications for graduation must be received in the Registrarial Services office no later than February 1 for Spring graduation, September 1 for Fall graduation, and December 1 for Winter graduation.

See also University Graduation Requirements, p. 52.

7.2 Graduation Grade-Point Averages

GPA's for graduation will be calculated to one decimal place (not rounded) over the successfully completed courses counting towards the degree. Where the record contains more than one attempt in a course counting towards the degree, only the last attempt will be included in the graduation GPA.

GPA in the Major Discipline

The graduation GPA in the Major discipline will be calculated over successfully completed courses in the Major discipline. Consult the departments for details.

Overall GPA

The overall GPA for students graduating in Honours is calculated over all the courses required for the degree.

7.3 Graduation Requirements, Pass B.A. Degree

Candidates for Graduation must have the following:

- (a) 15.0 credits, not including any credits used to meet Qualifying-University year requirements;
- (b) a CI of 4.00 or better;
- (c) a minimum of 8.0 credits beyond the 100-level;
- (d) the program requirements of the Major discipline(s) (consult the departmental entries);
- (e) a GPA of 4.0 or better in each Major discipline and concentration;
- (f) no more than 23 attempts (i.e., no more than 18 unsuccessful or forfeited attempts);
- (g) sufficient Carleton credits to meet the residence requirement (see 3.12).

In addition, students must be recommended by their Major discipline(s).

7.4 Graduation with Distinction

To qualify for Graduation with Distinction, students in the Pass B.A. Degree program must:

1. complete the Pass B.A. program within a maximum of 17 attempts; (where there are additional attempts consisting of courses designated as "Extra to Degree", the student will not necessarily be disqualified, see Regulation 4);
2. have maintained Good Standing throughout their degree studies;
3. present a minimum of 10.0 credits taken at Carleton;
4. achieve an overall GPA of 9.5 or better. This GPA will be calculated over all successfully completed courses presented for the degree, including all courses "Extra to Degree" in excess of the 17 permitted attempts.

7.5 Graduation Requirements, Honours B.A., B.Com., B.Hum., B.I.B., B.J., B.Mus., B.P.A., B.S.W.

Candidates for Graduation must have the following:

- (a) 20.0 credits (20.5 for Journalism programs);
- (b) a CI of 6.00 or better;
- (c) a minimum of 11.0 credits beyond the 100-level, (11.5 in Journalism programs, 13.0 in B.Com. and in B.A. (Hons). programs in Mathematics and Statistics);
- (d) the program requirements of the Major discipline(s) (consult the departmental entries);
- (e) a GPA of 6.5 or better in each Major discipline (and concentration where applicable);
- (f) no more than 26 attempts (26.5 in Journalism programs), i.e., no more than 6 unsuccessful or forfeited attempts;
- (g) sufficient Carleton credits to meet the residence requirement (see 3.12).

In addition, students must be recommended by their Major disciplines.

7.6 Classes of Honours

For students who entered Honours in or after the session beginning September, 1980, three classes of Honours degrees are awarded according to GPAs attained:

- (a) Highest Honours: 10.0 in the Honours subject and 8.0 overall.
- (b) High Honours: 9.0 in the Honours subject and 7.0 overall.
- (c) Honours: 6.5 in the Honours subject and 5.0 overall.

Departments may recommend the next higher class of Honours degree when a student has one average in the appropriate higher range and the other within 0.2 grade points of the higher range.

To determine the class of Honours degree for students in Combined Honours programs the average is taken in each of the two subjects, and the simple average of the two is used.

7.7 "Mention: français"

Students registered in certain Pass and Honours programs may earn the notation "Mention: français" by completing part of their Pass/Honours requirement in French and by demonstrating a knowledge of the history and culture of French Canada. The general requirements are as follows. For more specific details consult the departmental entries.

Students in a Pass program must present 1.0 credit in advanced French and 1.0 credit devoted to the history and culture of French Canada. In addition, 1.0 200- or 300-level credit in the Major discipline must be taken in French.

Students in an Honours program must present 1.0 credit in French language and 1.0 credit devoted to the history and culture of French Canada. In addition, 1.0 200- or 300-level credit and 1.0 400-level credit in the Honours discipline must be taken in French.

Students in Combined programs must fulfill the "Mention: français" requirement in both disciplines.

Courses taught in French in the Major discipline may be taken at Carleton, at the University of Ottawa on

the Exchange Agreement (see 3.8), or at a francophone university on a Letter of Permission (3.10). Students planning to take courses on exchange or on a Letter of Permission should take careful note of the residence requirement for a minimum number of Carleton courses in their Pass or Honours programs (3.13).

8. The Qualifying-University Year and First-Year Curriculum

8.1 Qualifying-University Year

Over the course of the degree, students in Qualifying-University year must present 5.0 credits in addition to the regular degree requirements. 2.0 of the 5.0 credits must include:

- (a) a 100-level course in English;
- (b) Mathematics 69.007★ and 69.017★;
- (c) a language other than English.

Students planning to apply for admission to other programs (i.e., B.J., B.Mus., B.Com.) should ensure that they take appropriate prerequisite courses. All Qualifying-University year students should familiarize themselves with the provisions for Accelerated Progress and ensure that their choice of courses will permit them to proceed into Second-year should they qualify. (see also 5.11)

8.2 Distribution of Courses in First Year

To ensure that students in the Faculties of Arts and Social Sciences will be in a reasonable position to meet the requirement to declare a Major no later than Second year, they are required to include a minimum number of courses leading to a Major in their first five attempts.

First-year students in the Pass or Honours B.A., B.J., B.P.A. or B.S.W. program must include in their program at least one course leading to a Major discipline (see below) in each of three departments, schools or interdisciplinary areas within the Faculties of Arts and Social Sciences. Students should include in their First-year registration any course that is required for their prospective Major discipline and should be aware that many upper-year courses stipulate prerequisites. Students in the B.J. and B.P.A. must also meet the First-year prescriptions of their programs.

Students in the B.Com., B.I.B. and B.Mus. programs must meet the First-year prescriptions of their programs and must include at least one course leading to a Major discipline from each of two different departments, schools or interdisciplinary areas within the Faculties of Arts and Social Sciences.

The courses open to First-year students that fulfil this requirement are:

Art History 11.100, 11.110★, 11.111★, 11.120★, 11.121★
 Biology 61.103★, 61.104★
 Canadian Studies 12.100
 Classical Civilization 13.100, 13.102★, 13.103★, 13.119, 13.290, 13.291
 Economics 43.100
 Film Studies 19.100
 French 20.150, 20.152, 20.161, 20.162, 20.163

Geography 45.101, 45.102★, 45.103★
 German 22.111, 22.115, 22.120, 22.205, 22.206
 Greek 15.105★, 15.106★, (prerequisite 15.105★), 15.115
 History All 100- and 200-level courses
 Italian 26.100, 26.170, 26.200, or 26.180 (intensive course)
 Latin 16.105★, 16.106★, (prerequisite 16.105★), 16.115
 Law 51.100
 Linguistics 29.100
 Mass Communication 27.111
 Mathematics 69.102 (69.107★ and 69.207★) and 69.112 (69.117★ and 69.217★)
 Music 30.100, 30.170 (B.Mus only)
 Philosophy 32.101★, 32.102★, 32.103★, 32.107★, 32.110, 32.150, 32.151★, 32.160, 32.184★, 32.201★, 32.203★
 Political Science 47.100
 Psychology 49.100
 Religion 34.102★ 34.103★, 34.105★, 34.106★, 34.107★, 34.108★, 34.109★, 34.122, 34.125
 Russian 36.100, 36.120
 Social Work 52.100
 Sociology/Anthropology 53.100, 54.100, 56.100
 Spanish 38.115, 38.120, 38.203

Note:

There is no guarantee that every course will be offered each session. Please check individual listings.

8.3 Course Selection

Subject to the provisions of 8.1 and placement requirements, Qualifying-University and First-year students can choose 100-level courses from all departments in Arts, Social Sciences, and Science.

While the University makes every effort to allow students to enrol in courses of their choice, enrolments may have to be limited in certain of the more popular courses.

Academic Clubs and Societies

The following clubs and societies serve to broaden and enrich the curriculum, and to offer students social activity and friendship related to their intellectual interests. The societies listed here are particularly pertinent for students registered in the Faculties of Arts or Social Sciences.

The Carleton Classics Society sponsors public lectures by visiting speakers and student-faculty social gatherings. Faculty co-ordinator: Chair of the Classics department.

The Carleton Commerce Society organizes social and academic events to strengthen the link between students, faculty, and the business community, and to promote stronger ties among Business students.

The Directed Interdisciplinary Studies Society aims to reflect the diverse nature of D.I.S. by planning social events that will satisfy the needs of all members. An important part of our mandate is to increase awareness of the nature of interdisciplinary studies within the University. Interested students may call the

Institute at 520-2368 or drop by the lounge at 2203 Dunton Tower.

ELSS, the English Literature Students' Society, open to all students, offers theatre trips, work with a printing press, a lecture series, writers' groups, debating groups, reading groups, parties and the publication of a creative writing monthly. Faculty liaison: R.G. Laird.

The Club Francophone is open to all members of the University interested in the French language and in French and French-Canadian culture. The Club promotes informal language practice and sponsors speakers, discussions, musical and social events, films and excursions. Faculty adviser: N. Sarma.

The Carleton University Geography Society (CUGS) organizes lunch-time talks or movies of academic interest and a variety of social events, promotes student-faculty contact, and sponsors the Harvey Humbolt Chair of Geomorphography.

The Ottawa Historical Association is a "town and gown" association of people interested in history, offering a series of lectures and discussions.

The Carleton Linguistics Society sponsors academic events that are of interest to students in Linguistics and the Certificate Program in the Teaching of English as a Second language, as well as a variety of social functions to strengthen ties among the students and to promote informal contact with the faculty of the Department. The Society also provides a tutoring service for students in introductory courses.

The Mass Communication Society of Carleton University participates in academic conferences, sponsors talks, holds an annual career fair and stages social events.

The Department of Music sponsors a number of groups which are open to anyone who is interested and which perform both on and off campus throughout the year. *The Carleton Choir* is open to anyone

who loves to sing. *The Carleton Concert Band* is open to anyone with skill on an instrument. *The Carleton Jazz Ensemble* is open to those who love to play jazz, by audition only. *The Collegium Musicum* performs music from the medieval period to the 17th century. *The Twentieth Century Performance Group* specializes in music by avant-garde composers and students in the Department. It is a group of 15 to 20, and auditions may be required. In addition, *The Music Society* is a group of students which sponsors various activities.

The Carleton University Philosophy Society organizes lectures, discussion groups and social events for all members of the Carleton University community interested in philosophy. Further information is available through the secretary of the Department of Philosophy.

The Carleton Press Club, the academic society of the School of Journalism, sponsors talks, panel discussions and social functions. The Press Club also publishes a yearbook for the School of Journalism called "The Next Estate."

The Public Administration Undergraduate Society organizes social and academic events to strengthen ties between students and faculty and to help acquaint students with current issues in public administration.

La Sociedad Hispánica (Hispanic Society) welcomes all members of the University interested in Latin American and Spanish cultures and language. The emphasis is on the practice of the spoken language in a relaxed atmosphere and on sponsoring films, lectures and social events to expose others to these cultures.

The Sociology/Anthropology Society promotes social events, film and conferences that foster academic discourse among students interested in sociology and anthropology.

Academic Administration

Dean

M.J. Bibby

Associate Dean and Registrar

G.E. Bauer

Assistant Dean

Richard L. Fleming

Assistant Registrar

P. Clarke

Departmental Chairs:

Civil and Environmental Engineering

J.L. Humar

Electronics

J.S. Wight

Mechanical and Aerospace Engineering

R. Bell

Systems and Computer Engineering

S.A. Mahmoud

Bachelor of Engineering Degree Program

The Bachelor of Engineering degree is awarded on successful completion of a four-year program of studies with specialization in Aerospace, Civil, Computer Systems, Electrical, Environmental or Mechanical Engineering. The four-year program comprises common core material emphasizing fundamental mathematical, physical and engineering sciences followed by further study in one of the six programs. The Environmental Engineering program provides a sound background in environmental engineering and the environmental aspects of chemistry and biology. Several specializations are possible within other Program Options. In Aerospace Engineering, students may select a specialization in Aerodynamics, Propulsion and Vehicle Performance; Aerospace Structures, Systems and Vehicle Design; or Aerospace Electronics and Systems. In Civil Engineering, students may choose either the Program Option or they may choose a Concentration in Management; in Electrical Engineering, students may choose a General Stream or they may specialize in Microelectronics, Systems, or Telecommunications, or a Concentration in Management; in Mechanical Engineering, students choose either the Program Option or a Concentration in Management or a Concentration in Computer Integrated Manufacturing.

Licensing, Registration and Accreditation

Licensing and registration are key words for doctors, for lawyers and for engineers. To practise engineering in Canada as a professional (P. Eng.), a person must be registered (licensed) with his or her provincial or territorial professional engineering association.

In 1965, the Canadian Council of Professional Engineers (C.C.P.E.) established the Canadian Engineering Accreditation Board (C.E.A.B.). This board develops standards for engineering degree programs in Canadian universities and monitors the application of these standards to ensure engineering graduates meet the educational requirements of the profession. Graduates from a C.E.A.B.-accredited program meet the educational requirements for registration in any one of the C.C.P.E.'s 12 federated associations. Most Carleton engineering graduates become registered and licensed with Professional Engineers Ontario (P.E.O.).

The Aerospace, Civil, Computer Systems, Electrical and Mechanical Bachelor of Engineering degree programs are accredited by the Canadian Engineering Accreditation Board. In addition, the new Environmental Engineering Program has been designed for accreditation.

Admission Requirements

Qualifying-University Year

The OSSD. A 75 percent average must be presented on a minimum of 10 Advanced credits at Grades 11 and 12, including an appropriate preparation in Chemistry, Physics and Grade 12 Mathematics.

First Year

The OSSD or the equivalent, including at least six OACs. The six OACs must include the courses Calculus, Algebra and Geometry, Chemistry and Physics with a 70 percent average or better. It is strongly recommended that the remaining OACs include at least one in English or Français.

Possession of the minimum requirement does not guarantee admission. Because of a limit on the number of spaces in the program, preference will be given to applicants with the best academic qualifications. Applicants should be aware that in recent years, the majority of students admitted to the programs offered by the Faculty of Engineering had an average greater than 80 percent.

A student unable to meet the foregoing specific course requirements but otherwise admissible to Carleton University may be admitted, but will be required to satisfy the outstanding requirements at the Qualifying-University year level.

Engineering students are required to make extensive use of computers, and some background in this area prior to admission is a definite asset.

Enrolment Limitation

Applicants should note that in view of limited human and physical resources, meeting the admission requirements can only establish eligibility for selection to the Faculty of Engineering.

Each student offered admission to the Faculty of Engineering will have a place reserved in at least one of the specialized Program Options: Aerospace, Civil, Computer Systems, Electrical, Environmental or Mechanical Engineering; this will be confirmed in the letter offering admission. Transfer from one Program

Option to another, requested after admission, will be permitted wherever possible. However, the Faculty of Engineering reserves the right to restrict enrolment in each of the foregoing Program Options.

Advanced Standing

Applications for admission with advanced standing to the program leading to the Bachelor of Engineering degree will be evaluated on an individual basis.

Successful applicants will have individual academic subjects, completed with grades of C- or better, evaluated for academic standing, provided the academic work has been completed at another university or degree-granting college or in another degree program at Carleton University.

Mature Applicants

Persons who lack the normal entrance requirements as published in this Calendar but who have been away from full-time studies for a minimum of two years and are 21 years of age or over, by December 31 of the year in which they wish to enrol, may receive consideration for admission to a degree program. See Admissions Section, p. 36 for detailed information.

Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about *itv* refer to p. 67.

English Proficiency Requirements

English Placement Test

The University policy governing applicants whose mother tongue is a language other than English is given on p. 31.

Engineering Summer Report

All students entering Second year of an Engineering program must submit a Summer Report, Engineering 91.200. The Summer Report is normally written on a topic assigned by the Faculty. It should range from 2,000 words minimum to 3,000 words maximum and is due on the first day of classes for the Fall term. Engineering 91.200 is a course which carries no weight and no course credit.

Industrial Experience Program

Students with a cumulative GPA of 7.0 or better may apply to the Industrial Experience Program. Subject to the availability of positions, suitable students may be placed in industry or government, for a period of 12 to 16 months beginning in May following the Third year of the program. Applications must be made in writing to the relevant Departmental Chair before October 1 of Third year.

Students participating in the "Industrial Experience Program", Engineering 91.400, will be required to submit a formal report when entering Fourth Year. Engineering 91.400 carries no weight and no course credit.

Engineering Common Core

First Year		Lectures and Tutorials		Laboratory and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
65.111★	Chemistry for Engineering Students	-	3	-	3	6
69.104★	Calculus for Engineering Students	4	-	-	-	5
69.114★	Linear Algebra for Engineering and Computer Science Students	-	4	-	-	5
75.101★	Introductory Physics I	3	-	3	-	6
75.102★	Introductory Physics II	-	3	-	3	6
91.100★	Orientation to Engineering	2	-	4	-	5
91.101★	Engineering Graphics	-	2	-	4	5
91.111★	Mechanics-Statics	3	-	3	-	6
91.166★	Structured Problem Solving & Computers	3	-	1	-	5
91.167★	Computers and Applications	-	3	-	1	5
Elective	Humanities or Social Sciences	3	3	-	-	7
		18	18	11	11	61

Concentration in Management

Students in Civil, Electrical, or Mechanical Engineering have the opportunity to undertake a "Concentration in Management" within their degree program.

Among other things, the Management Concentration provides direct entry to the Masters of Management Studies program (MMS degree) offered by the School

of Business. Engineering students will be particularly interested in this program because it emphasizes the management of technology.

With this emphasis, the MMS is an attractive alternative to traditional MBA programs offered by other schools.

The Concentration in Management is designed to provide students with an understanding of the issues, concepts and techniques in the management of technology and resources. It aims to impart to them enhanced problem-solving skills and should help to widen the scope of their employment.

A student who wishes to follow the Management Concentration must declare his or her intent with the Faculty Registrars Services office at the beginning of Second year. Students who successfully complete the concentration will receive an entry "Concentration in Management" on their transcripts.

The Concentration in Management consists of the following courses:

Business 42.270★, Accounting Fundamentals, Business 42.210★, Management and Organizational Behaviour, Business 42.224★, Basic Marketing, Mathematics 69.352★, Probability and Statistics, Engineering 91.380★, Engineering Economics, Engineering 94.320★, Industrial Engineering, one Business Elective from 42.250★, Introduction to Business Finance, or 42.311★, Micro-Organizational Behaviour.

In addition to the above, students must take the following courses that are specific to their engineering programs:

Civil Engineering: Engineering 82.440★, Construction / Project Management; Two Business Electives from 42.312★, Personnel Management, 42.360★, Small Business Management, 42.415★, Organizational Development and Change, 42.435★, Operations Research II, 42.467★, Management of Technology and Innovation.

Mechanical Engineering: One Engineering Elective from 82.440★, Construction / Project Management, 94.415★, Engineering Management; Two Business electives from 42.312★, Personnel Management, 42.360★, Small Business Management, 42.415★, Organizational Development and Change, 42.435★, Operations Research II, 42.467★, Management of Technology and Innovation.

Electrical Engineering: Engineering 94.415★, Engineering Management; One Business elective from 42.312★, Personnel Management, 42.360★, Small Business Management, 42.415★, Organizational Development and Change, 42.435★, Operations Research II, 42.467★, Management of Technology and Innovation.

The above description applies to students starting the Concentration in Management in their second year programs in the academic year 1995/96 and beyond. For students who are entering their third and fourth year, the course requirements are those listed under the 1993/94 and earlier University Calendars.

Spreadsheets showing the concentration pattern for each discipline are contained in the booklet: *A Guide to the Engineering Program*.

Qualifying-University Year

Students who have not yet completed six OACs (including Calculus, Algebra and Geometry, Physics and Chemistry) or equivalent may apply to Qualifying-University year. The formal admission requirements are listed on p. 41, although alternative background preparations (e.g. courses from other Provinces, mature applicant status, etc.) may be presented for evaluation.

The course of studies consists of 5.0 full credits including mathematics, physics, chemistry and electives. The exact course of studies depends on background preparation and is to be determined in consultation with the Faculty Registrar Services office at the time of registration.

Accelerated Progress

Qualifying-University year (Engineering) students who pass all required courses in Qualifying-University year, including electives, with a B- or 7.0 average or better, may have their programs assessed for the purpose of reducing the number of courses required to graduate from the Bachelor of Engineering program. For example, approved humanities/social sciences electives taken as Qualifying-University year electives, which are at a First-year level or higher, may be used to fulfil program requirements in the Bachelor of Engineering program. It is necessary for

Qualifying-University year students to meet the promotion requirements of the Qualifying-University year, as well as the Accelerated Progress requirements, in order to be considered for Accelerated Progress.

Academic Standing and Promotion

Students in Qualifying-University year are permitted to write supplemental examinations or to enrol in Summer-session courses, in a maximum of two credits or equivalent.

To achieve satisfactory academic standing the student must, at the end of August:

- (a) have received credit in Chemistry, Mathematics and Physics
- (b) have a GPA of 3.4 or better in all courses completed in the year.

Students who achieve satisfactory academic standing are promoted to First-year Engineering. Students who fail to achieve satisfactory academic standing forfeit their undergraduate status in the Faculty of Engineering.

The Qualifying-University year is not considered as part of the Bachelor of Engineering program for the purpose of assessment of academic standing in the program.

General Information

The study of Engineering is necessarily structured. Upper-year courses are built on the material studied in previous years. The program consists of a consecutive sequence of four years, each of which comprises the two terms of the Fall/Winter session. Regulations governing promotion are detailed below.

With few exceptions, courses in the Faculty of Engineering are offered only in the Fall/Winter session and only in the Day division. However, a significant portion of the Engineering program involves courses in the Faculties of Science, Arts and Social Sciences; many of these courses are offered in the Summer session and in the Evening division of the Fall/Winter session.

It should be noted that in all courses with computer programming assignments students usually find it necessary to be on campus at other than scheduled periods to make use of computing facilities.

For administrative matters regarding regulations and records, students are encouraged to seek advice from the Faculty Registrar Services office.

Course Load

The course requirements for each year of the program are tabulated beginning on p. 85 along with the course weight and hours for each course. Where the fraction $\frac{3}{2}$ appears in the laboratory and problem analysis column, it means a three-hour period is scheduled on alternate weeks; the fraction $\frac{1}{2}$ refers to a one hour workshop on alternate weeks.

During the Fall/Winter session, the normal course load for a full-time student is all of the courses for the program year in which the student is registered. The normal course load for Fourth-year students is the lesser of the courses of the program year or the number of courses required to satisfy graduation requirements. In order to enrol in a course, a student must have satisfied the prerequisites for that course or have permission of the department offering the course. Any student who is enrolled in a course but who has not satisfied the prerequisites for that course is required to obtain approval or may be required to withdraw from the course.

During the Summer session, the maximum course load is 2.0 credits.

Elective Courses

The program course requirements tabulated beginning on p. 85 include humanities or social sciences electives. Electives are selected from one or more of the categories listed below. A free elective can be chosen from any of the three categories. Where an elective course is shown in the tables with lectures two hours a week and laboratory/problem analysis three hours alternate weeks, the requirement is equally satisfied by a course having three hour lectures a week and no laboratory/problem analysis.

1. Engineering Electives: All undergraduate courses bearing the departmental numbers of the Faculty of Engineering (i.e. 81, 82, 86, 87, 88, 90, 94, 97) are approved Engineering electives. Graduate courses bearing those numbers may be taken as electives

with the approval of the chair of the department offering the course.

2. Scientific Electives: Courses in this classification include the physical sciences, mathematical sciences, computer science and related courses. Approved scientific electives are listed in the booklet, *Engineering Program Guide*, available from the Faculty Registrar Services office.

3. Humanities or Social Sciences Electives: Courses in this classification must be chosen from among those listed as approved in the booklet, *Engineering Program Guide*, available from the Faculty Registrar Services office.

Student Responsibility

The student is responsible for knowing the regulations of the Faculty of Engineering and for complying with them. Any exceptions to the regulations must be approved, in writing, by the Faculty of Engineering Committee on Admission and Studies.

Grading System

Standing in courses will be shown by alphabetical grades. (See p. 50).

Each course is assigned a course weight, shown on the charts beginning on p. 93. The weighted grade points achieved in a course are the product of the course weight and the grade points for that course. The cumulative weighted GPA is the sum of weighted grade points divided by the sum of course weights, for all courses for which the student has received a grade in the program of studies.

Where regulations refer to 1.0 credit, it is understood that two 0.5 credits are in all respects equivalent to 1.0 credit. Any course in the Engineering program with a weight of seven or greater is 1.0 credit; any course with a weight of six or less is a 0.5 credit.

Notations to represent special circumstances are as follows:

Aeg

Aegrotat standing is a pass standing granted despite absence from the final examinations. It may be granted by the Engineering Faculty Committee on Admission and Studies only in response to a student's written request. Aegrotat standing will be granted only in exceptional circumstances and if the term work has been of high quality.

F

Failure; no academic credit.

FNS

Failure, but with supplemental privileges withdrawn because of unsatisfactory term work or an unacceptably low mark in the examination. No academic credit.

Wdn

Withdrawn in good standing; no academic credit.

Abs

Absent from formally scheduled final, special final and supplemental examinations where the necessary term work has been completed. No supplemental privileges. No academic credit.

Def

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Engineering Faculty Committee on Admission and Studies for deferred examination privileges. Such applications must:

1. be made in writing to the Faculty Registral Services office not later than one week after the date of the examination; and
2. be fully supported in the case of illness by a medical certificate or appropriate documents in other cases.

Sat

Satisfactory.

Uns

Unsatisfactory.

Grade-Raising Examinations

The Faculty of Engineering does not recognize grade-raising examinations. Students enrolled in the Bachelor of Engineering degree program may not take grade-raising examinations in any course that forms part of their program.

Supplemental Examination Privileges

Students are permitted to write supplemental examinations in any course with a written final examination from the Fall/Winter session just completed for which they have received a grade of *F*. (See p. 51 for the University's policy regarding supplemental examinations.).

Students may write supplemental examinations according to the following allowable maximum:

Number of Full Credit Equivalents Taken	Maximum Number of Full Credit Equivalent Supplemental Examinations Allowed
0.5 - 1.0	0
1.5 - 2.5	0.5
3.0 - 4.0	1.0
4.5 - 5.5	1.5
6.0 or more	2.0

A pass in a supplemental examination is given a grade of *D-*, which has a grade point value of 1. A failure in a supplemental examination retains the *F* grade.

Summer Session

Students are permitted to enrol in a maximum of 2.0 credits in the Summer session. All Engineering, Mathematics and Science courses taken in the Summer session may be used to complete program requirements. Such courses count towards both continuation and program completion, and are reflected in the year's credit count, the year's weighted GPA, and in the cumulative weighted GPA.

The maximum number of Humanities or Social Sciences electives that can be counted towards continuation is 1.0 credit in an academic year. Excess Humanities or Social Sciences electives, taken during a Summer session or the previous Fall/Winter session, may be used to fulfil future program requirements. These courses will not affect the continuation decision for either the current year or for any future year but will count towards degree program completion, and will be reflected only in the cumulative weighted GPA.

Academic Standing and Continuation

Academic standing for the academic year is determined, for all students, at the beginning of September. Standing is based on grades achieved during the previous 12-month period. This includes all earned grades for the Fall/Winter session, supplemental examination results in Fall/Winter session courses, and results in Summer session courses.

A year of study, as used in the Faculty of Engineering, refers to the academic year from September 1 to August 31 of the following year, and not to the program year defined in the previous section of these regulations. A year's weighted GPA is based on all courses (including a maximum of 1.0 credit of humanities or Social Sciences elective) taken during one academic year; calculation of the cumulative weighted GPA is based on the courses from all academic years in which the student has been registered in the B.Eng. program. The most recent grade obtained in each course will be used to compute the cumulative weighted GPA.

Satisfactory Academic Standing

In order to meet the minimum requirements for satisfactory academic standing all students must:

1. meet the weighted GPA for the year of study just completed as listed below;
2. meet the cumulative weighted GPA for all courses taken as part of the B.Eng. program as listed below:

	Year's GPA	Cumulative GPA
after one year of study	3.0	3.0
after two years of study	3.2	3.2
after three or more years of study	3.4	3.4

3. not receive a grade of *F*, *FNS*, or *ABS* in the year of study just completed in excess of the allowable number listed below:

Number of Credits Taken	Maximum Number of Credits Graded <i>F</i> , <i>FNS</i> , or <i>Abs</i>
0.5 - 1.0	0
1.5 - 2.5	0.5
3.0 - 4.0	1.0
4.5 - 5.5	1.5
6.0 or more	2.0

Continuation

Students who achieve satisfactory academic standing may continue in their program.

Failure

Students who fail to achieve satisfactory academic standing fail the current year of study.

Academic Probation

Students who have failed their year of study and have never been on academic probation may continue on academic probation.

Students who are placed on academic probation must repeat courses in which grades lower than *C*-were received in the failed year.

In order to clear probation, a student must obtain a year's weighted GPA of 4.0 or better and must not receive a grade of *F*, *FNS*, or *ABS* in the year of study just completed in excess of the allowable number listed below:

Number of Credits Taken	Maximum Number of Full Credits Graded <i>F</i> , <i>FNS</i> , or <i>Abs</i>
0.5 - 2.0	0
2.5 - 4.5	0.5
5.0 or more	1.0

Ineligibility to Return

Students who fail an academic year on a second occasion are ineligible to return to the Faculty of Engineering.

Students who fail to clear probation are ineligible to return to the Faculty of Engineering.

Graduation

In order to fulfil the minimum graduation requirements for the degree of Bachelor of Engineering, a candidate must:

1. have completed the requirements of the First through Fourth years, inclusive, with a cumulative GPA of 3.4 or better.
2. have achieved satisfactory academic standing in the final year of study.
3. have attained SAT grades in Engineering 91.200, Engineering Summer Report, and the program specific Professional Practice Seminar (82.495, 86.495, 94.395, or 97.395) course.
4. be recommended for graduation by the Faculty of Engineering.

Students must also fulfil all University graduation requirements. (See p. 52.)

Degrees with Distinction

Upon recommendation of the Faculty of Engineering, the notation "with High Distinction" may be made on the academic record of a candidate for the degree of Bachelor of Engineering. To be considered for recommendation, the candidate is expected to obtain a weighted GPA of at least 10.0 in the course requirements of the Fourth year of that student's Program Option; in addition, the student must present a weighted GPA of at least 8.0 in the course requirements of the First to Fourth years, inclusive. Any candidate with a failure, supplemental examination, repetition or replacement course will not normally be considered for a degree "with High Distinction."

Upon recommendation of the Faculty of Engineering, the notation "with Distinction" may be made on the academic record of a candidate for the degree of Bachelor of Engineering. To be considered for this recommendation, the candidate is expected to obtain a weighted GPA of 9.0 or better in the course requirements of the Fourth year of that student's Program Option; in addition, the student must present a weighted GPA of 7.0 or better in the course requirements of the First to Fourth years, inclusive. Any candidate with a failure, supplemental examination, repetition or replacement course in more than a total of 2.0 credits will not normally be considered for a degree "with Distinction."

Note:

In addition to these numerical requirements, students must also fulfil the detailed requirements listed under the "Graduation" section, see above.

Graduate Programs

Programs of study are offered by the Faculty of Engineering leading to the degrees of Master of Engineering and Doctor of Philosophy in Aerospace, Civil, Electrical and Mechanical Engineering; to the degree of Master of Engineering in Materials Engineering, and, in co-operation with the Faculty of Science, to the degree of Master of Science in Information and Systems Science. In co-operation with the School of Computer Science, the Department of Mathematics and Statistics, and the University of Ottawa, the Faculty offers a joint program leading to the degree of Master of Computer Science. Joint programs in Aerospace, Civil, Electrical and Mechanical Engineering at both Masters and Ph.D. levels are offered in conjunction with the University of Ottawa. For further details, contact the Graduate Secretary, Faculty of Engineering, or refer to the *Faculty of Graduate Studies and Research Calendar*.

Academic and Professional Clubs and Societies

The following clubs and societies operating on the campus serve to broaden and enrich the curriculum and to offer students social activity and friendship related to their intellectual interests. The societies listed here are particularly pertinent for students registered in the Faculty of Engineering.

The Canadian Society for Mechanical Engineering—Student Section sponsors field trips, films and speakers on industrial and other aspects of mechanical engineering. Faculty Adviser: Dr. J.T. Rogers.

The American Society for Materials for students interested in Materials Engineering; students are invited to the monthly meetings of the Ottawa Valley chapter of ASM: Faculty Adviser, Dr. M. J. Bibby.

The Canadian Aeronautics and Space Institute meets monthly to provide a forum for discussion and dissemination of information on topics relating to aeronautics and space activities. Faculty Adviser: Dr. P.E. Barrington.

The Canadian Society for Civil Engineering promotes technical activities related to all areas of civil engineering, such as building design and construction, geotechnical engineering and transportation. The activities of this group are designed to enhance and broaden the student's appreciation of the profession. To this effect, speakers are brought to the Department of Civil Engineering to give seminars on current topics and visits are organized to construction sites and other facilities where civil engineering has played an important role. Faculty Adviser: Dr. S.J. Kennedy

The Carleton Student Engineering Society (C.S.E.S.) is open to all members of the University who are enrolled in Engineering courses. Through its academic and social activities, C.S.E.S. acts as a liaison between the students and the governing bodies of the University and promotes professional interest, high standards and a spirit of mutual assistance in the study of engineering.

The Institute of Transportation Engineers (I.T.E.) is an international organization of professional transportation engineers. The I.T.E. is organized into Districts, of which Canada is one, and into Sections, of which Ottawa is one. For students in transportation, there are Student Chapters, one of which is located on campus. The Chapter is closely associated with the local Section. Joint meetings are held once a month in Ottawa. The meetings have both a technical and social content. Membership in the Student Chapter is an excellent way of becoming part of the profession of transportation engineering. Students enrolled in the transportation program are eligible to join. Faculty Adviser: Dr. John P. Braaksma.

The Student Branch of the *Institute of Electrical and Electronics Engineers (I.E.E.E.)* organizes a series of events of both professional and general interest. Among these activities are an annual "Computer Fair", an employment workshop for upper-year students, an annual "papers" night and student-faculty get-togethers. Faculty Adviser: Dr. Calvin Plett.

Engineering Common Core Committee

Members of Committee

G.E. Bauer, Chair
C.L. Tan (*Mechanical and Aerospace Engineering*)
A.M. Khan (*Civil and Environmental Engineering*)
W.M. Snelgrove (*Electronics*)
D.L. Bailey (*Systems and Computer Engineering*)

Common Core Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Engineering 91.100★

Orientation to Engineering

This course is intended to introduce the profession of engineering to the students. Several guest lecturers will present information on topics such as; the major disciplines of engineering, contemporary issues in engineering, the importance of writing well in engineering practice, and the regulation of the profession by organizations such as the PEO. Drawing instruments and elementary engineering drawing techniques such as pictorial sketching and orthographic projection will be studied; section views; the CAD system will be introduced.

Lectures and tutorials two hours a week, laboratories four hours a week.

Department offering course: Mechanical and Aerospace Engineering.

Engineering 91.101★

Engineering Graphics

Engineering drawing techniques; fits and tolerances; working drawings; fasteners'. Elementary descriptive geometry; the true length of a line; edge view of a plane; intersections of geometric entities; developments of ducts. Further instruction in the use of the CAD system will be incorporated into this material. A small design project will be carried out and working drawings will be prepared. An introduction to Fundamentals of Manufacturing Methods will be presented. Prerequisite: Engineering 91.100★.

Lectures and tutorials two hours a week, laboratory four hours a week.

Department offering course: Mechanical and Aerospace Engineering.

Engineering 91.111★

Mechanics - Statics

Definition of basic concepts: mass, force, moment, equilibrium. Scalars and vectors. Applications of vector operations in three-dimensional statics. Free-body diagrams. Equilibrium. Truss analysis. Beams, bending moment and shear force diagrams, distributed forces, centroids, moment of inertia. Hydrostatics. Friction. Introduction to engineering stress and strain. Deformable bodies.

Lectures three hours a week, tutorials and problem analysis, three hours a week.

Department offering course: Civil and Environmental Engineering.

Engineering 91.166★**Structured Problem Solving and Computers**

Introduction to problem solving and engineering models. A structured approach to the solution of engineering problems by programming a computer. Programming in a high-level language (C++). Algorithm design, procedural and data abstraction, implementation, testing. Program style, documentation, reliability. Examples from science and engineering, including non-numerical examples.

Lectures and tutorials three hours a week; workshop one hour a week.

Department offering course: Systems and Computer Engineering.

Engineering 91.167★**Computers and Applications**

Basic computer organization: CPU and memory. Representation of numbers and characters. Instructions: operation codes and addressing modes. Assembly language. Input-output devices: interfaces, programming. Introduction to the relationship between application programs, high-level languages, operating systems and computer architecture. Engineering applications in command and control.

Prerequisite: Engineering 91.166★.

Lectures and tutorial three hours a week; workshop one hour a week.

Department offering course: Systems and Computer Engineering.

Engineering 91.200**Engineering Summer Report**

All students entering Second year of Engineering are required to submit a Summer Report. The report is normally based on a topic assigned by the Faculty, and it is non-technical in nature with the purpose of convincing a non-expert audience of the student's point of view. Students are encouraged and may be required to submit a draft of their report in order to receive feedback on their work in-progress. The final Engineering Summer Report should be 2,000 to 3,000 words in length, and two copies of it are due on the first day of classes for the Fall term. Engineering 91.200 is a required course with a 0.0 credit value and carries a weight of 2. Grades for the course are SAT (satisfactory) or UNS (unsatisfactory).

Engineering 91.211★**Mechanics-Dynamics**

Kinematics and kinetics of particles: rectilinear and curvilinear motions; Newton's second law; energy and momentum methods. Kinematics and kinetics of rigid bodies: plane motion of rigid bodies; forces and accelerations; energy and momentum methods.

Prerequisites: Engineering 91.111★ and Mathematics 69.104★ and 69.114★.

Lectures three hours a week, problem analysis three hours a week.

Department offering course: Mechanical and Aerospace Engineering.

Engineering 91.241★**Thermodynamics and Heat Transfer**

Basic concepts of thermodynamics: temperature, work, heat, internal energy and enthalpy. First law of thermodynamics for closed and steady-flow open systems. Thermodynamic properties of pure substances; changes of phase; equation of state. Second law of thermodynamics: concept of entropy.

Simple power and refrigeration cycles. Introduction to heat transfer: conduction, convection and radiation.

Prerequisite: Chemistry 65.111★, Mathematics 69.104★, Physics 75.101★ and 75.102★.

Lectures three hours a week, laboratory and problem analysis three hours a week.

Department offering course: Mechanical and Aerospace Engineering.

Engineering 91.251★**Circuits and Signals**

Nature and properties of signals. Fourier analysis. Circuit elements: definitions and basic properties. Voltage and current sources. Kirchhoff's laws, linearity, and superposition. Thevenin and Norton theorems: circuit simplification techniques; resistance circuits, AC signals; phasors. AC steady-state analysis: impedance, admittance and transfer properties; frequency response; detailed treatment of first order (RL and RC) circuits. Transient response: first-order circuits, form of response; initial and final condition; relation to AC steady-state properties. Properties of LR and CR circuits: AC steady-state response; resonance.

Prerequisites: Physics 75.101★ and 75.102★ and concurrent registration in Mathematics 69.201.

Lectures three hours a week, laboratory and problem analysis three hours a week.

Department offering course: Electronics.

Engineering 91.266★**Computer Methods in Engineering**

Introduction to FORTRAN. Errors: truncation and rounding. Modelling and analysis. Curve fitting; Lagrange formulation, Chebyshev and least squares fit; orthogonal polynomials. Numerical differentiation and integration. Solution of differential equations in engineering. Eigenvalues and eigenvectors. Use of spread-sheets and symbolic mathematics programs. Prerequisites: Engineering 91.166★ and Mathematics 69.104★ and 69.114★.

Lectures three hours a week, workshop one hour alternate weeks.

Department offering course: Systems and Computer Engineering.

Engineering 91.380★**Engineering Economics**

Introduction to resources, resource management, productivity and efficiency, and the role of the engineer. Fundamental economic and problem-solving concepts. Discounted cash flow mechanics. Economic analyses including structural, replacement and financial analyses and analysis of public projects. Management of money: depreciation and income tax considerations, estimating and forecasting, effects of inflation and sensitivity analysis. Economic decisions; break-even analysis, risk and uncertainty.

Prerequisite: Third-year registration.

Lectures three hours a week.

Department offering course: Civil and Environmental Engineering.

Engineering 91.400**Industrial Experience Report**

Students participating in the Industrial Experience Program must submit a formal report upon returning. This report should describe the organization in which the internship took place, the role of the student, the

experience obtained and an appraisal of the effectiveness of the training received. Engineering 91.400 is a course with a 0.0 credit value and carries no weight. Grades for the course are SAT (satisfactory) or UNS (unsatisfactory). This course is extra to the degree requirements.

Concentration in Management Courses

Engineering 90.460★

Engineering Application of Operations Research
Nonlinear programming, forecasting, decision analysis, game theory, reliability, equipment replacement, maintenance, simulation, cases and applications in management science.

Prerequisite: Engineering 94.320★

Department offering course: Civil and Environmental Engineering.

Student may take Business 42.435★, Operations Research II as a substitute with the permission of the Registrar.

Engineering 90.461★

Principles of Finance

Financial management of a firm, cost and structure of capital, dividend policy decisions, financial analy-

sis and financial decisions of public enterprise, risk and assets evaluation, capital investment decisions, asset management problems.

Prerequisite: Engineering 91.380★, Business 42.101★, 42.102★.

Department offering course: Civil and Environmental Engineering.

Student may take Business 42.250★, Introduction to Business Finance as a substitute with the permission of the Registrar.

Engineering 90.462★

Theories and Processes in Organizational Behaviour

Macro theories of organization and organizational process, group dynamics; discussion of organizational processes such as conflicts and communication control organizational structure and design.

Prerequisite: Business 42.210★.

Department offering course: Civil and Environmental Engineering.

Student may take Business 42.311★, Micro-Organizational Behaviour as a substitute with the permission of the Registrar.

Aerospace Engineering Program

Aerospace Engineering covers a wide variety of applications ranging from aircraft aerodynamics, structures and propulsion to the complete design and systems integration of air and space vehicles. The main disciplines relating to airframes, propulsion and space platforms are solid mechanics and materials, fluid mechanics and thermosciences; the topic areas are basically the same as for Mechanical Engineering, with a somewhat different emphasis. Electronic systems are a vital, sometimes dominant, element in modern aircraft and spacecraft for navigation, guidance and control. In addition, electronic systems for remote sensing, communication, etc., normally comprise the entire payload of a spacecraft. Electronics and Systems engineering are key disciplines in such situations, dynamics and the thermosciences are important in designing the systems for the environment in which they must function.

Three streams are available in the Aerospace Engineering degree program (A) Aerodynamics, Propul-

sion and Vehicle Performance; (B) Aerospace Structures, Systems and Vehicle Design; (C) Aerospace Electronics and Systems. The (A) and (B) streams are identical to the Mechanical program for the first two years while the (C) stream differs only slightly in Second year. The Third year of all streams differs substantially from the Mechanical Engineering program while the Fourth year is almost entirely different. Stream (C) incorporates numerous electronics and systems engineering courses. All aerospace engineering students will participate as design team members in a single major project, typically involving the design of some aerospace vehicle in an environment much like that of an engineering design office.

Suggested Engineering Electives

Any course numbered Engineering 87/88/94/97.xxx for which the prerequisite material and other noted constraints are satisfied.

Aerospace Stream A - Aerodynamics, Propulsion and Vehicle Performance**Aerospace Stream B -Aerospace Structures, Systems and Vehicle Design**

Aerospace Stream A,B		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Second year						
Term		Fall	Winter	Fall	Winter	
69.201	Intermediate Calculus	4	4	-	-	9
82.220★	Mechanics of Materials I	-	3	-	3	6
86.230★	Introductory Fluid Mechanics	-	3	-	3	6
86.270★	Introduction To Engineering Materials	3	-	3	-	6
91.200	Summer Report	-	-	-	-	0
91.211★	Mechanics - Dynamics	3	-	3	-	6
91.241★	Thermodynamics and Heat Transfer	3	-	3	-	6
91.251★	Circuits and Signals	3	-	3	-	6
91.266★	Computer Methods in Engineering	-	3	-	1/2	4
97.261★	Electrical Energy Conversion	-	3	-	3	6
Elective	Humanities or Social Sciences	3	3	-	-	7
		19	19	12	9.5	62

Aerospace Stream C		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Aerospace Electronics and Systems						
Second year						
Term		Fall	Winter	Fall	Winter	
69.201	Intermediate Calculus	4	4	-	-	9
82.220★	Mechanics of Materials I	-	3	-	3	6
86.230★	Introductory Fluid Mechanics	-	3	-	3	6
91.200	Summer Report	-	-	-	-	0
91.211★	Mechanics - Dynamics	3	-	3	-	6
91.241★	Thermodynamics and Heat Transfer	3	-	3	-	6
91.251★	Circuits and Signals	3	-	3	-	6
91.266★	Computer Methods in Engineering	3	-	1/2	-	4
97.267★	Switching Circuits	-	3	-	3/2	5
97.257★	Electronics I	-	3	-	3	6
97.261★	Electrical Energy Conversion	-	3	-	3	6
Elective	Humanities or Social Sciences	3	-	-	-	4
		19	19	9.5	13.5	64

Aerospace Stream A		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Aerodynamics, Propulsion & Vehicle Performance						
Third year						
Term		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
69.375★	Mathematical Methods I	4	-	-	-	5
86.304★	Dynamics of Machinery	-	3	-	-	4
86.322★	Solid Mechanics I	3	-	3	-	6
86.333★	Fluid Mechanics	3	-	3	-	6
86.340★	Applied Thermodynamics	-	3	-	-	4
86.352★	Feedback Control Systems	-	3	-	-	4
86.390★	Mechanical and Aerospace Engineering Laboratory I	-	-	-	6	4
87.302★	Aerospace Design and Practice	-	3	-	3	6
87.370★	Aerospace Materials and Manufacturing Methods	3	-	-	-	4
91.380★	Engineering Economics	3	-	-	-	4
94.360★	Systems and Simulation	3	-	3	-	6
Elective	Humanities or Social Sciences	-	3	-	-	4
		19	19	9	9	62

Aerospace Stream B Aerospace Structures, Systems & Vehicle Design Third year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
69.375★	Mathematical Methods I	4	-	-	-	5
86.304★	Dynamics of Machinery	-	3	-	-	4
86.322★	Solid Mechanics I	3	-	3	-	6
86.333★	Fluid Mechanics	3	-	3	-	6
86.352★	Feedback Control Systems	-	3	-	-	4
86.390★	Mechanical and Aerospace Engineering Laboratory I	-	-	-	6	4
87.302★	Aerospace Design and Practice	-	3	-	3	6
87.311★	Lightweight Structures	-	3	-	-	4
87.370★	Aerospace Materials and Manufacturing Methods	3	-	-	-	4
91.380★	Engineering Economics	3	-	-	-	4
94.360★	Systems and Simulation	3	-	3	-	6
Elective	Humanities or Social Sciences	-	3	-	-	4
		19	19	9	9	62

Aerospace Stream C Aerospace Electronics and Systems Third year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
69.375★	Mathematical Methods I	4	-	-	-	5
86.322★	Solid Mechanics I	3	-	3	-	6
87.302★	Aerospace Design and Practice	-	3	-	3	6
91.380★	Engineering Economics	3	-	-	-	4
94.302★	Program Design and Construction	-	3	-	2	5
94.303★	Introduction to Real-Time Systems	3	-	2	-	5
94.351★	Communication Theory	-	3	-	3/2	5
94.360★	Systems and Simulation	3	-	3	-	6
97.350★	Digital Electronics	-	2	-	3	5
97.354★	Electromagnetic Theory	-	3	-	3/2	5
97.359★	Electronics II	3	-	3	-	6
		19	18	11	11	63

Aerospace Stream A Aerodynamics, Propulsion & Vehicle Performance Fourth year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
86.491★	Mechanical and Aerospace Engineering Laboratory II	1	-	5	-	5
86.495★	Professional Practice Seminar	-	3	-	-	0
87.403★	Aerospace Systems Design	3	-	3	-	6
87.432★	Applied Aerodynamics and Heat Transfer	3	-	-	-	4
87.436★	Aircraft & Spacecraft Performance & Dynamics	3	-	-	-	4
87.438★	Aircraft Stability and Control	-	3	-	-	4
87.497	Aerospace Engineering Project	-	-	8	8	9
Elective	Engineering (Note a)	3	-	-	-	4
Elective	Engineering (Note a)	3	-	-	-	4
Elective	Engineering (Note a)	-	3	-	-	4
Elective	Engineering (Note a)	-	3	-	-	4
Elective	Engineering (Note a)	-	3	-	-	4
Elective	Engineering	-	3	-	-	4
		16	18	16	8	56

Note:

(a) Selected from available Engineering 87.4xx or 88.4xx courses

Aerospace Stream B Aerospace Structures, Systems and Vehicle Design Fourth year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
86.412★	Engineering Materials: Strength/Fracture	3	-	-	-	4
86.491★	Mechanical & Aerospace Engineering Laboratory II	1	-	5	-	5
86.495★	Professional Practice Seminar	-	3	-	-	0
87.403★	Aerospace Systems Design	3	-	3	-	6
87.436★	Aircraft and Spacecraft Performance and Dynamics	3	-	-	-	4
87.462★	Introductory Aeroelasticity	-	3	-	-	4
87.497	Aerospace Engineering Project	-	-	8	8	9
Elective	Engineering (Note a)	3	-	-	-	4
Elective	Engineering (Note a)	3	-	-	-	4
Elective	Engineering (Note a)	-	3	-	-	4
Elective	Engineering (Note a)	-	3	-	-	4
Elective	Engineering (Note a)	-	3	-	-	4
Elective	Engineering	-	3	-	-	4
		16	18	16	8	56

Note:

(a) Selected from available Engineering 87.4xx or 88.4xx courses

Aerospace Stream C		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Aerospace Electronics and Systems						
Fourth year						
Term		Fall	Winter	Fall	Winter	
86.352★	Feedback Control Systems	-	3	-	-	4
86.495★	Professional Practice Seminar	-	3	-	-	0
87.403★	Aerospace Systems Design	3	-	3	-	6
87.497	Aerospace Engineering Project	-	-	8	8	9
Two of:						
94.460★	Digital Communications	3	-	3/2	-	5
94.461★	Microprocessor Systems					
97.453★	Radio Frequency Lines and Antennas	3	-	3/2	-	5
Two of:						
94.401★	Operating Systems	-	3	-	3/2	5
94.445★	Discrete Time Systems	-	3	-	3/2	5
97.459★	Communication Links					
97.460★	Radar and Navigation					
Elective	Engineering	3	-	-	-	4
Elective	Engineering	-	3	-	3/2	5
Elective	Humanities or Social Sciences	3	-	-	-	4
Elective	Humanities or Social Sciences	-	3	-	-	4
		15	18	14	12.5	56

Civil Engineering Program

Civil engineers play a key role in the development and management of the infrastructure of a country. They are engaged in all aspects related to research, planning, construction and maintenance of bridges, buildings, dams, airports, power stations, highways, subways, transportation networks, harbours, water supply and waste water treatment facilities. The modern civil engineer is called upon to use his or her expertise in analysis, computer applications, design and management skills to plan and execute projects in areas such as energy resources development, engineering for cold climates, hazardous waste management and environmental engineering, which are of national importance.

At Carleton University, students in their final two and one-half years in the Civil Engineering program will build upon the broad background in engineering developed in the common core program of the first one and one-half years. The program of the Fourth year requires the students to study in the general areas of structural mechanics, structural engineering, geotechnical engineering and transportation engineering. The students are also encouraged to make use of all available elective courses to obtain as broad a background in Civil Engineering as possible.

Many civil engineers also make their careers in practices that are managerial in nature and involve managerial decision making. The managerial aspects of civil engineering and engineering at large are ex-

pected to play an increasing role in the future training of engineers. In recognizing this potential the Department of Civil and Environmental Engineering has introduced the degree program in Civil Engineering with "Concentration in Management." In this program, the Civil Engineering curriculum is complemented by courses in subjects such as management accounting, industrial engineering, operations research and organizational behaviour. Upon satisfactory completion of a prescribed set of courses the students enrolled in the subspecialty will receive the designation "Concentration in Management" on their transcripts.

For more information students should consult p. 85 and the booklet *Engineering Program Guide*, available from the Faculty Registral Services office.

Suggested Electives

- 81.301★ Environmental Engineering Unit Operations
- 81.302★ Environmental Engineering Systems Modelling
- 81.303★ Water Resources Engineering
- 81.406★ Geohydrology and Groundwater Flow
- 82.420★ Structural Analysis II
- 82.422★ Wood Engineering
- 82.431★ Foundation Engineering

- 82.432★ Reinforced and Prestressed Concrete Design I
- 82.433★ Urban Planning
- 82.435★ Transportation Geography
- 82.437★ Hydraulics of Municipal Waste Water Systems
- 82.438★ Behaviour and Design of Steel Structures
- 82.440★ Construction / Project Management
- 82.441★ Hydrology
- 82.442★ Integrated Structural Design
- 82.443★ Masonry Design
- 82.450★ Computer Methods in Civil Engineering
- 86.270★ An introduction to Engineering Materials
- 86.412★ Engineering Materials: Strength and Fracture
- 87.430★ Acoustics and Noise Control
- 87.468★ Composite Materials
- 88.411★ Strength Analysis
- 88.414★ Vibrations in Mechanical Systems
- 88.443★ Energy Conversion and Power Generation
- 88.447★ Heating, Ventilating and Air Conditioning
- 88.474★ Computer Integrated Manufacturing Systems (CIMS)
- 94.260★/94.360★ Systems and Simulation
- 94.415★ Engineering Management
- 97.261★ Electrical Energy Conversion

Civil		Lectures and		Laboratories and		Course
Second year		Tutorials		Problem Analysis		Weight
Term		Fall	Winter	Fall	Winter	
69.201	Intermediate Calculus	4	4	-	-	9
82.220★	Mechanics of Materials I	-	3	-	3	6
82.270★	Civil Engineering Materials	3	-	3	-	6
86.230★	Introductory Fluid Mechanics	-	3	-	3	6
91.200	Summer Report	-	-	-	-	0
91.211★	Mechanics-Dynamics	3	-	3	-	6
91.241★	Thermodynamics and Heat Transfer	-	3	-	3	6
91.251★	Circuits and Signals	3	-	3	-	6
91.266★	Computer Methods in Engineering	3	-	1/2	-	4
One of						
94.260★	Systems and Simulation	-	3	-	3	6
97.261★	Electrical Energy Conversion					
Elective	Humanities or Social Sciences	3	3	-	-	7
		19	19	9.5	12	62

Civil Third year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
69.375★	Mathematical Methods I	4	-	-	-	5
82.104★	Surveying (Note a)	-	-	-	-	4 (Spring)
82.323★	Structural Analysis I	3	-	3/2	-	5
82.324★	Introduction to Structural Design	3	-	3/2	-	5
82.325★	Design of Structural Steel Components	-	3	-	3/2	5
82.326★	Design of Reinforced Concrete Components	-	3	-	3/2	5
82.328★	Geotechnical Mechanics	3	-	3/2	-	5
82.334★	Transportation Engineering and Planning	-	3	-	3/2	5
82.337★	Municipal Engineering	3	-	3/2	-	5
91.380★	Engineering Economics	3	-	-	-	4
82.340★	Introduction to Environmental Engineering	-	3	-	3/2	5
Elective	Humanities or Social Sciences	-	3	-	-	4
		19	19	6	6	58 + 4 (Spring)

Note:

(a) Students are encouraged to take Engineering 82.104★ (Surveying) in either the First or Second year of their Engineering program. Lectures and field work three weeks at the beginning of the Spring term.

Civil Fourth year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
82.428★	Geotechnical Engineering	3	-	3/2	-	5
82.429★	Highway Engineering	-	2	-	3/2	4
82.444★	Advanced Mechanics	3	-	3/2	-	5
82.495★	Professional Practice Seminar	-	3	-	-	0
82.497	Engineering Project	-	-	8	8	9
Three of:						
82.422★	Wood Engineering	2	-	3/2	-	4
82.432★	Reinforced & Prestressed Concrete Design	2	-	3/2	-	4
82.438★	Behaviour and Design of Steel Structure	2	-	3/2	-	4
82.440★	Construction/Project Management					
82.441★	Hydrology					
82.443★	Masonry Design					
82.450★	Computer Methods in Civil Engineering					
Three of:						
82.420★	Structural Analysis II	-	2	-	3/2	4
82.431★	Foundation Engineering	-	2	-	3/2	4
82.433★	Urban Planning	-	2	-	3/2	4
82.435★	Transportation Geography					
82.437★	Hydraulics of Municipal Waste Water Systems					
82.442★	Integrated Structural Design					
	Free Elective (Note a)	3	-	-	-	4
	Free Elective (Note a)	-	3	-	-	4
		15	14	15.5	14	55

Note:

(a) This course carries typical elective weight; actual weight is the assigned weight of the course selected by each student.

Computer Systems Engineering Program

The study of Computer Systems Engineering centres around the design, analysis and implementation of engineering systems that have computers as components. A Computer Systems Engineer is one who can combine advanced software and hardware to build such systems, subject to economic and performance constraints. The Computer Systems Engineering program aims to provide students with an excellent foundation in the principles, methods, computer tools

and elements of professional practice for this purpose.

Students in the final two and one-half years in the Computer Systems Engineering program at Carleton University build upon the broad background in engineering developed in the common core programs of the first one and one-half years. While the Third and Fourth years have some commonality with the Elec-

trical Engineering program, Computer Systems engineers concentrate primarily on digital logic, computer systems organization and design, software and systems engineering. In addition, students may take a number of electives either to broaden their background or to provide further specialized knowledge.

Suggested Electives

Engineering

- 82.220★ Mechanics of Materials I
 86.230★ Introductory Fluid Mechanics
 88.271★ An Introduction to Electrical Engineering Materials
 88.453★ An Introduction to Robotics
 94.320★ Industrial Engineering
 94.405★ Discrete Simulation and Its Applications
 94.415★ Engineering Management
 94.445★ Discrete Time Systems
 94.455★ Automatic Control Systems I
 94.462★ Introduction to Computer Communications
 94.470★ Telecommunications Engineering
 94.481★ Software Engineering Project
 94/97.496★ Special Topics in Electrical and Computer Systems Engineering
 97.354★ Electromagnetic Theory
 97.368★ Solid State Electronics
 97.452★ Microwave Circuits
 97.453★ Radio Frequency Lines and Antennas
 97.455★ Telecommunication Circuits
 97.456★ CAD for Communication Circuits
 97.459★ Communications Links
 97.460★ Radar and Navigation
 97.469★ Integrated Circuit Design and Fabrication
 97.470★ Integrated Circuit Fabrication Technology

- 97.475★ Electronic Properties of Materials
 97.477★ Analog Integrated Electronics
 97.478★ Advanced Digital Integrated Circuit Design

Mathematics, Physics and Computer Science

- 69.384★ Data Structures and Algorithm Analysis
 70.483★ Computable Functions
 70.484★ Design and Analysis of Algorithms
 75.364★ Modern Physics
 95.207★ Programming Language Concepts
 95.401★ Concurrent Programming
 95.402★ Computer Graphics
 95.404★ Systems Software
 95.405★ A First Course in Robotics and Computer Vision
 95.407★ Applied Artificial Intelligence

Business, Economics and Law

- 42.101★ Principles of Financial Accounting
 42.102★ Management Accounting
 42.200 Intermediate Accounting
 42.250★ Introduction to Business Finance
 42.261★ Business Law I
 42.262★ Business Law II
 42.311★ Micro-Organizational Behaviour
 43.100 Introduction to Economics
 43.201★ Introduction to Microeconomic Theory and Analysis
 43.356★ Introduction to Labour Economics
 43.357★ Introduction to Industrial Relations
 43.430 Industrial Organization and Public Policy
 51.321★ Legal Organization of Economic Units
 51.333★ Injury, Compensation and the Law
 51.352★ Communications Law II
 51.422★ Regulation of Management of Economic Units

Computer Systems Second year

Term		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
		Fall	Winter	Fall	Winter	
69.201	Intermediate Calculus	4	4	-	-	9
91.200	Summer Report	-	-	-	-	0
91.211★	Mechanics - Dynamics	3	-	3	-	6
91.241★	Thermodynamics and Heat Transfer	3	-	3	-	6
91.251★	Circuits and Signals	3	-	3	-	6
91.266★	Computer Methods in Engineering	3	-	1/2	-	4
94.202★	Program Design and Construction	-	3	-	2	5
94.203★	Introduction to Real-Time Systems	-	3	-	2	5
97.257★	Electronics I	-	3	-	3	6
97.267★	Switching Circuits	-	3	-	3/2	5
Elective	Humanities or Social Sciences	3	3	-	-	7
		19	19	9.5	8.5	59

Computer Systems Third year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
69.375★	Mathematical Methods I	4	-	-	-	5
91.380★	Engineering Economics	3	-	-	-	4
94.301★	Operating Systems and Data Bases	3	-	-	-	4
94.310★	Systems Analysis	3	-	-	-	4
94.333★	Real-Time Concurrent Systems	-	2	-	3	5
94.351★	Communication Theory	-	3	-	3/2	5
94.360★	Systems and Simulation	3	-	3	-	6
94.361★	Microprocessor Systems	-	3	-	3/2	5
94/97.395★	Professional Practice Seminar (Note a)	-	3	-	-	4
97.350★	Digital Electronics	-	2	-	3	5
97.359★	Electronics II	3	-	3	-	6
		19	17	6	9	58

Computer Systems Fourth year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
94.457★	Introduction to the Architecture of Computer Systems	3	-	-	-	4
94.460★	Digital Communications	3	-	3/2	-	5
97.475★	Electronic Materials, Devices and Transmission Media	3	-	-	-	4
94.480★	Software Engineering	3	-	3/2	-	5
94.485★	Computer Systems Design Laboratory	-	2	-	4	5
94/97.498	Engineering Project (Note a)	-	-	8	8	9
97.476★	Digital Integrated Electronics	-	3	-	3/2	5
Elective	Engineering or Scientific	-	2	-	3/2	4
Elective	Engineering or Scientific	-	2	-	3/2	4
Elective	Humanities or Social Sciences	3	3	-	-	7
		15	12	11	16.5	52

Note:

(a) See course description to determine appropriate course number.

Electrical Engineering Program

Electrical engineers are engaged in research, design, development and production associated with a wide variety of electrical devices and systems. Examples include electronic circuit design and fabrication, and the design and application of communications systems, computers, and power systems. Opportunities exist for electrical engineers in industry, government and education.

At Carleton University, the first one and one-half years of the Engineering program provide a broad common background of technical fundamentals. The last two and one-half years of Electrical Engineering concentrate primarily on electronics, electromagnetics, control and communications. In addition, Electrical Engineering students may further enhance their specialized knowledge by choosing Fourth-year Engineering electives in the areas of microelectronics, systems, computing and telecommunications.

Management and business decision-making are often important in engineering professional practice. Moreover, it is expected that managerial matters will play an ever increasing role. Students in Electrical Engineering who wish to acquire a background in this area are invited to select the Concentration in Management beginning at Second year. Those who suc-

cessfully complete this concentration will receive an entry "Concentration in Management" on their transcripts. For more information students should consult p. 85 and the booklet *Engineering Program Guide* available from the Faculty Registral Service office.

Suggested Electives

- 87.430★ Acoustics and Noise Control
- 88.443★ Energy Conversion and Power Generation
- 88.453★ An Introduction to Robotics
- 88.474★ Computer Integrated Manufacturing Systems (CIMS)
- 88.475★ CAD/CAM
- 94.310★ Systems Analysis
- 94.320★ Industrial Engineering
- 94.362★ Electric Power Circuits and Machines
- 94.401★ Operating Systems
- 94.405★ Discrete Simulation and its Applications
- 94.415★ Engineering Management
- 94.445★ Discrete Time Systems
- 94.457★ Introduction to the Architecture of Computer Systems
- 94.460★ Digital Communications

94.462★	Introduction to Computer Communications
94.481★	Software Engineering Project
94.485★	Computer Systems Design Laboratory
97.452★	Microwave Circuits
97.455★	Telecommunication Circuits
97.456★	CAD for Communication Circuits
97.460★	Radar and Navigation
97.470★	Integrated Circuit Fabrication Technology

97.475★	Electronic Materials, Devices and Transmission Media
97.476★	Digital Integrated Electronics
97.478★	Advanced Digital IC Design
97.496★	Special Topics in Electrical Engineering

For **Computer Science** electives see p. 220

Electrical Second year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.201	Intermediate Calculus	4	4	-	-	9
88.271★	Introduction to Electrical Materials	3	-	3/2	-	5
91.200	Summer Report	-	-	-	-	0
91.211★	Mechanics - Dynamics	3	-	3	-	6
91.241★	Thermodynamics and Heat Transfer	-	3	-	3	6
91.251★	Circuits and Signals	3	-	3	-	6
91.266★	Computer Methods in Engineering	3	-	1/2	-	4
94.260★	Systems and Simulation	-	3	-	3	6
97.257★	Electronics I	-	3	-	3	6
97.261★	Electrical Energy Conversion	-	3	-	3	6
Elective	Humanities or Social Sciences	3	3	-	-	7
		19	19	8	12	58

Electrical Third year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
69.375★	Mathematical Methods I	4	-	-	-	5
91.380★	Engineering Economics	3	-	-	-	4
94.302★	Program Design and Construction	-	3	-	2	5
94.303★	Introduction to Real-Time Systems	3	-	2	-	5
94.351★	Communication Theory	-	3	-	3/2	5
97.367★	Switching Circuits	3	-	3/2	-	5
94/97.395★	Professional Practice Seminar	-	3	-	-	0
97.350★	Digital Electronics	-	2	-	3	5
97.354★	Electromagnetic Theory	-	3	-	3/2	5
97.359★	Electronics II	3	-	3	-	6
97.368★	Solid State Electronics	3	-	3/2	-	5
		19	18	8	8	55

Electrical (General Stream)		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Fourth year		Fall	Winter	Fall	Winter	
Term						
Four of:						
94.455★	Automatic Control Systems I	3	-	3/2	-	5
94.457★	Introduction to the Architecture of Computer Systems	3	-	3/2	-	5
94.460★	Digital Communications	3	-	3/2	-	5
97.461★	Microprocessor Systems					
97.453★	Radio Frequency Lines and Antennas					
97.455★	Telecommunication Circuits	3	-	-	-	4
97.469★	Integrated Circuit Design and Fabrication					
97.475★	Electronic Materials, Devices and Transmission Media					
97.477★	Analog Integrated Electronics					
94/97.497	Engineering Project (Note a)	-	-	8	8	9
Elective	Engineering (Note b)	-	3	-	3/2	5
Elective	Engineering (Note b)	-	3	-	3/2	5
Elective	Engineering (Note b)	-	3	-	3/2	5
Elective	Engineering or Scientific	-	3	-	3/2	5
Elective	Humanities or Social Sciences	3	3	-	-	7
		15	15	12.5	14	55

Note:

(a) See course description to determine appropriate course number.

(b) Selected from 94.XXX★ or 97.XXX★.

Electrical (Microelectronics Stream)		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Fourth year		Fall	Winter	Fall	Winter	
Term						
97.461★	Microprocessor Systems	3	-	3/2	-	5
97.469★	Integrated Circuit Design and Fabrication	3	-	3/2	-	5
97.475★	Electronic Materials, Devices and Transmission Media	3	-	-	-	4
97.477★	Analog Integrated Electronics	3	-	3/2	-	5
94/97.497	Engineering Project (Note a)	-	-	8	8	9
Three of:						
97.456★	CAD for Communication Circuits	-	3	-	3/2	5
97.470★	Integrated Circuit Fabrication Technology	-	3	-	3/2	5
97.476★	Digital Integrated Electronics	-	3	-	3/2	5
97.478★	Advanced Integrated Digital Circuit Design					
Elective	Engineering or Scientific	-	3	-	3/2	5
Elective	Humanities or Social Sciences	3	3	-	-	7
		15	15	12.5	14	55

Note:

(a) See course description to determine appropriate course number.

Electrical (Systems Stream)		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Fourth year		Fall	Winter	Fall	Winter	
Term						
94.401★	Operating Systems	-	3	-	-	4
94.455★	Automatic Control Systems I	3	-	3/2	-	5
94.457★	Architecture of Computer Systems	3	-	-	-	4
94.460★	Digital Communications	3	-	3/2	-	5
97.461★	Microprocessor Systems	3	-	3/2	-	5
94/97.497	Engineering Project (Note a)	-	-	8	8	9
Elective	Engineering (Note b)	-	3	-	3/2	5
Elective	Engineering (Note b)	-	3	-	3/2	5
Elective	Engineering or Scientific	-	3	-	3/2	5
Elective	Humanities or Social Sciences	3	3	-	-	7
		15	15	12.5	12.5	54

Note:

(a) See course description to determine appropriate course number.

(b) Selected from 94.XXX★ or 97.XXX★.

Electrical (Telecommunications Stream) Fourth year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
94.460★	Digital Communications	3	-	3/2	-	5
97.461★	Microprocessor Systems	3	-	3/2	-	5
Two of:						
94.455★	Automatic Control Systems I	3	-	3/2	-	5
97.453★	Radio Frequency Lines and Antennas	3	-	3/2	-	5
97.455★	Telecommunication circuits					
94/97.497	Engineering Project (Note a)	-	-	8	8	9
94.470★	Telecommunications Engineering	-	3	-	3/2	5
Two of:						
94.462★	Introduction to Computer Communications	-	3	-	3/2	5
97.452★	Microwave Circuits	-	3	-	3/2	5
97.459★	Communication Links					
Elective	Engineering or Scientific	-	3	-	3/2	5
Elective	Humanities or Social Sciences	3	3	-	-	7
		15	15	14	14	56

Note:

(a) See course description to determine appropriate course number.

Environmental Engineering Program

Environmental Engineering focuses on management and protection of the environment and on the development of engineered solutions which minimize the threat to human health. Environmental Engineers play a major role in the development of technically sound and economically feasible solutions to air and water pollution, noise pollution, and hazardous and toxic waste management. They deal with issues related to landfills and solid waste management, remediation of contamination, ecosystem protection and preservation, and the development of sustainable and environmentally safe methods for the allocation, development and utilization of natural and renewable resources.

Environmental Engineering is a multidisciplinary activity. Environmental Engineers work closely with professionals from many other disciplines including biologists, chemists, economists, sociologists, lawyers, political scientists, urban and regional planners and others who play an integral role in defining and designing sustainable developments.

The program in Environmental Engineering at Carleton is structured to provide the undergraduate with a sound training in the environmental aspects of chemistry and biology, which are considered essential to the in-depth appreciation of environmental problems. The engineering component of the undergraduate degree consists of a strong engineering common

core, which emphasizes the pure sciences, engineering analysis, computer applications and engineering design. The Environmental Engineering component in the undergraduate degree program consists of a set of well structured courses that emphasize the conceptualization, mathematical modelling, engineering design and solution of problems in Environmental Engineering. The scientific and engineering aspects of the program prepare the ground for design and synthesis courses such as environmental planning and decision making and environmental impact assessment. The interdisciplinary aspects of the program are enhanced by a wide selection of elective courses in the humanities and social sciences, which emphasize management, ethics, economics and law, as they relate to the environment. Students in Environmental Engineering are encouraged to select during their First and Third years of study appropriate humanities or social sciences courses from the list provided below.

Geography 45.211★ Physical Basis of Environmental Management

Philosophy 32.184★ Introduction to Environment Ethics

Geography 45.102★ Environment, Resources and Society

Law 51.100 Introduction to Legal Studies

Law 51.380★ Law of Environmental Quality.

Environmental Second year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
61.100	Exploration in Biology	3	3	3	3	11
65.231★	Analytical Chemistry	-	3	-	3	6
69.201	Intermediate Calculus	4	4	-	-	9
81.201★	Process Analysis for Environmental Engineering	-	3	-	3/2	5
82.220★	Mechanics of Materials I	3	-	3	-	6
86.230★	Introductory Fluid Mechanics	-	3	-	3	6
91.200	Summer Report	-	-	-	-	0
91.211★	Mechanics-Dynamics	3	-	3	-	6
91.241★	Thermodynamics and Heat Transfer	3	-	3	-	6
91.251★	Circuits and Signals	-	3	-	3	6
91.266★	Computer Methods in Engineering	3	-	1/2	-	4
		19	19	12.5	13.5	65

Environmental Third year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
61.364★	Analysis of Ecological Relationships	-	-	-	4	3
65.280★	Environmental Chemistry	3	-	3	-	6
69.352★	Probability and Statistics	-	4	-	-	5
69.375★	Mathematical Methods I	4	-	-	-	5
81.301★	Environmental Engineering Unit Operations	-	3	-	3/2	5
81.302★	Environmental Engineering Systems Modelling	3	-	3/2	-	5
81.303★	Water Resources Engineering	-	3	-	3/2	5
81.304★	Contaminant & Pollutant Transport in the Environment	-	3	-	3/2	5
82.328★	Geotechnical Mechanics	3	-	3/2	-	5
82.337★	Municipal Engineering	3	-	3/2	-	5
82.437★	Hydraulics of Municipal Waste Water Systems	-	2	-	3/2	4
91.380★	Engineering Economics	3	-	-	-	4
Elective	Humanities or Social Sciences	-	3	-	-	4
		19	18	6	11.5	61

Environmental Fourth year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
81.401★	Hazardous Waste Management	3	-	3/2	-	5
81.403★	Air Pollution and Emissions Control	3	-	3/2	-	5
81.404★	Environmental Planning and Decision Making	3	-	3/2	-	5
81.408★	Environmental Impact Assessment	-	3	-	3/2	5
82.428★	Geotechnical Engineering	3	-	3/2	-	5
81.497	Engineering Project	-	-	8	8	9
One of:						
81.402★	Environmental Geotechnical Engineering	2	-	3/2	-	4
81.405★	Environmental Engineering Unit Processes	-	-	-	-	-
Three of:						
81.406★	Geohydrology and Ground Water Flow	-	2	-	3/2	4
81.407★	Solid Waste Management	-	2	-	3/2	4
82.334★	Transportation Engineering and Planning	-	2	-	3/2	4
82.433★	Urban Planning	-	-	-	-	-
82.495★	Professional Practice Seminar	-	3	-	-	0
Elective	Engineering	2	-	3/2	-	4
Elective	Engineering	-	2	-	3/2	4
		16	14	17	15.5	58

Mechanical Engineering Program

Mechanical Engineering by its nature is a highly diversified discipline, encompassing a range of activities from manufacturing processes and design to energy conversion and conservation. The main topic areas of the discipline are solid mechanics and materials, fluid mechanics and thermo-sciences which together provide the breadth necessary for the graduate mechanical engineer.

At Carleton University, students in their final two and one-half years in the Mechanical Engineering program will build upon the broad background in engineering developed in the common core program of the first one and one-half years. In addition to the continued major emphasis on design, dynamics, thermodynamics and heat transfer, the student can choose elective courses that span a wide range of applied subjects like noise control, energy conversion and power generation, vehicle technology, aerodynamics and flight mechanics, automatic controls, etc., which reflect the wide range of interests of faculty members of the Department of Mechanical and Aerospace Engineering. In addition, the final-year student completes a major project on a topic of current interest in mechanical or aeronautical engineering.

In select cases, students of high academic standing may be able to coordinate Engineering 88.497 project work with Masters thesis work such that they can complete an M.Eng. program about one year after obtaining their B.Eng. degree. Interested students should consult the Departmental Chair or Supervisor of Graduate Studies near the end of their Third year.

Management and business decision-making are often important in engineering professional practice. Moreover, it is expected that managerial matters will play an ever increasing role. Students in Mechanical Engineering who wish to acquire a background in this area are invited to select the Concentration in Management beginning at Second year. Those who successfully complete this concentration will receive an entry "Concentration in Management" on their transcripts. For more information students should consult p. 85 and the booklet *Engineering Program Guide* available from the Faculty Registrar Services office.

Mechanical Engineering with Concentration in Computer-Integrated Manufacturing

A special concentration in Computer-Integrated Manufacturing (CIM) is available for students with an interest in this area. The concentration is designed to provide an understanding of the issues, concepts and techniques of applying computer technology to design and manufacturing. The concentration consists of the following courses: Year Two: Business 42.101★, Financial Accounting, and Business 42.102★, Management Accounting; Year Three: Engineering 88.370★, Manufacturing Engineering, 91.380★, Engineering Economics, and Business 42.210★, Management and Organizational Behaviour; Year Four: four of Engineering 88.451★, State Space Modeling and Control Techniques, Engineering 88.475★, CAD/CAM, Engineering 88.474★, Computer Integrated Manufacturing Systems, Engineering 88.453★, Robotics, Engineering 94.405★, Discrete Simulation, Engineering 94.310★, Systems Analysis and 94.320★ Industrial Engineering.

The booklet *Engineering Program Guide*, available from the Faculty Registrar Services office should be consulted for the appropriate selection of elective choices for this program. A student who wishes to follow the CIM concentration should declare his/her intentions at the beginning of the Second year. Those who successfully complete this option will receive an entry "Concentration in Computer Integrated Manufacturing" on their transcripts.

Suggested Engineering Electives

- 82.104★ Surveying
- 82.334★ Transportation Engineering and Planning
- 82.437★ Hydraulics of Municipal Waste Water Systems

Any prefixed 87 or 88 courses having a weight of 4 units (i.e. three lecture hours a week) and for which prerequisites and other noted constraints are satisfied.

- 94.362★ Electric Power Circuits and Machines
- 94.415★ Engineering Management

Mechanical Second year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.201	Intermediate Calculus	4	4	-	-	9
82.220★	Mechanics of Materials I	3	-	3	-	6
86.230★	Introductory Fluid Mechanics	3	-	3	-	6
86.270★	Introduction To Engineering Materials	-	3	-	3	6
91.200	Summer Report	-	-	-	-	0
91.211★	Mechanics - Dynamics	-	3	-	3	6
91.241★	Thermodynamics and Heat Transfer	3	-	3	-	6
91.251★	Circuits and Signals	3	-	3	-	6
91.266★	Computer Methods in Engineering	-	3	-	1/2	4
97.261★	Electrical Energy Conversion	-	3	-	3	6
Elective	Humanities or Social Sciences	3	3	-	-	7
		19	19	12	9.5	62

Note:

(a) Engineering 91.200 is a course with a 0.0 credit value. It carries an Engineering weight of 2, and is done during the previous summer.

Mechanical Third year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
69.352★	Probability and Statistics	-	4	-	-	5
69.375★	Mathematical Methods I	4	-	-	-	5
86.304★	Dynamics of Machinery	-	3	-	-	4
86.322★	Solid Mechanics I	3	-	3	-	6
86.333★	Fluid Mechanics	3	-	3	-	6
86.340★	Applied Thermodynamics	-	3	-	-	4
86.352★	Feedback Control Systems	-	3	-	-	4
86.390★	Mechanical and Aerospace Engineering Laboratory I	-	-	-	6	4
88.302★	Machine Design and Practice	-	3	-	3	6
88.370★	Principles of Manufacturing Engineering	3	-	-	-	4
91.380★	Engineering Economics	3	-	-	-	4
94.360★	Systems and Simulation	3	-	3	-	6
Elective	Humanities or Social Sciences	-	3	-	-	4
		19	19	9	9	62

Mechanical Fourth year		Lectures and Tutorials		Laboratories and Problem Analysis		Course Weight
Term		Fall	Winter	Fall	Winter	
86.412★	Engineering Materials: Strength and Fracture	3	-	-	-	4
86.491★	Mechanical and Aerospace Engineering Laboratory II	1	-	5	-	5
86.495★	Professional Practice Seminar	-	3	-	-	0
88.403★	Mechanical Systems Design	3	-	3	-	6
88.446★	Heat Transfer	3	-	-	-	4
88.497	Engineering Project	-	-	8	8	9
Elective	Engineering (Note a)	2	-	3/2	-	4
Elective	Engineering or Scientific	2	-	3/2	-	4
Elective	Engineering (Note a)	-	2	-	3/2	4
Elective	Engineering (Note a)	-	2	-	3/2	4
Elective	Engineering (Note a)	-	3	-	-	4
Elective	Engineering or Scientific	-	2	-	3/2	4
		14	14	19	14	56

Note:

(a) Selected from available Engineering 86.4xx, 87.4xx or 88.4xx courses

Academic Administration

Dean
D.R. Gardner

Assistant Dean and Registrar
B.R. Lifeso

Secretary of the Faculty
J.E. Graham

Directory of Offices, Chairs and Directors

Office of the Dean
2250 Herzberg Physics, 520-4388

Office of the Assistant Dean and Registrar
2201 Herzberg Physics, 520-4440

Biology, J.A. Webb, Chair
583 Tory Building, 520-3888

Chemistry, J.S. Wright, Chair
203 Steacie Chemistry, 520-3841

Earth Sciences, G. Ranalli, Chair
320 Tory Building, 520-4400

Geography, C.R. Burn, Adviser,
B349 Loeb Building, 520-2561

Mathematics and Statistics, V. Dlab, Chair
4302 Herzberg Physics, 520-2155

Physics, Chair to be announced
3302 Herzberg Physics, 520-4377

Psychology, Adviser to be announced
B550 Loeb Building, 520-2644

Institute of Biochemistry
Director to be announced

Environmental Science Committee
P. Kruus, Chair

Integrated Science Studies Committee
G.R. Carmody, Chair

Committee on Combined Programs with Computer Science
I. Reichstein, Chair

Biotechnology Co-ordinators
J.A. Webb and To be announced

Biology and Geology
R.T. Patterson, Chair

Biology and Physical Geography
C.R. Burn, Chair

Biology and Psychology
Chair to be announced

Chemistry and Geology
G.B. Skippen, Chair

Chemistry and Physics
J.C. Armitage, Chair

Physical Geography and Geology
F.A. Michel

Geology and Physics
J. Blenkinsop, Chair

Geology and Statistics
R.T. Patterson, Chair

Mathematics and Physics
L. Resnick, Chair

Committee on Admission and Studies
J.A. Webb, Chair

Science Technology Centre
A.A. Raffler, Director

General Information

The Faculty of Science includes the Departments of Biology, Chemistry, Earth Sciences, Mathematics and Statistics, and Physics and provides programs leading to the degrees of Bachelor of Science, Bachelor of Science in Environmental Science, Bachelor of Science in Integrated Science Studies and Bachelor of Science with Honours.

The Science degree program is designed to provide specialization in one field of study called the Major field while permitting students to select other courses from complementary fields or disciplines in which they have a particular interest. The Major fields include Biochemistry, Biology, Chemistry, Computer Mathematics, Geology, Integrated Science Studies, Mathematics, Physics and Statistics, and the corresponding programs are detailed in the departmental sections of the Calendar.

For information about the Environmental Science degree program see p. 263.

For information about the Integrated Science Studies degree program see p. 346.

For information about the combined B.Sc./M.Sc. program see p. 401.

The Science degree program with Honours is designed for those students who wish to deepen and extend their studies in one particular field or area for the purpose of preparing themselves for graduate studies, or for entrance to a Faculty of Education or other fields of scientific endeavour. Honours may be taken in Biochemistry, Biology, Chemistry, Computer Mathematics, Environmental Science, Geology, Integrated Science Studies, Mathematics, Operations Research, Physical Geography, Physics, Psychology and Statistics. Combined Honours may be taken in, Biochemistry and Biotechnology, Biology and Biotechnology, Biology and Geology, Biology and Physical Geography, Biology and Psychology, Chemistry and Geology, Chemistry and Physics, Computer Science and Mathematics, Geology and Physical Geography, Geology and Physics, Geology and Statistics, Mathematics and Physics, and in Physics and Computer Science. The detailed pro-

grams are given in the appropriate departmental sections of the Calendar. The Honours program of each student is under the direct supervision of an Honours adviser of the student's department.

Accelerated Progress

Students registered in Qualifying-University year who successfully complete two years or 10.0 credits at the University with a B- or 70 percent average may have their programs assessed for the purpose of reducing the number of credits required to graduate. This reduction may be made for any student registered in the Faculty of Science who satisfies the promotion requirements for First-year Science within one academic year after admission to Qualifying-University year Science with a GPA of not less than 7.0 over credits taken and with the recommendation of a Major department or interdepartmental program committee.

Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about *itv* refer to p. 67.

Admission Requirements

Qualifying-University Year in Science

The OSSD. A 75 percent average must be presented on a minimum of 10 Advanced Level credits at the Grade 11 and Grade 12 level including Chemistry and Physics, and Mathematics at the Grade 12 level. (See Admission chart, p. 45).

Bachelor of Science, Major Program

First Year

1. The successful completion of 5.0 credits approved for a Qualifying-University year Science program with a GPA of 7.0 or better including a core of 0.5 credit in calculus and 2.5 credits chosen from biology, chemistry, geology, physics or mathematics. In addition, a GPA of 7.0 or better is required in the three-credit core. The grade offered in calculus must be C- or better. No more than one of the two and one half remaining core credits may be offered with a grade below C-; or

2. The OSSD including six OACs with an average of 70 percent, or equivalent, including a core consisting of one OAC in calculus and at least two OACs chosen from algebra and geometry, biology, chemistry, and physics. In addition, an average of 70 percent or better is required in the core OACs. The grade offered in OAC calculus must be 60 percent or better. No more than one of the two remaining core courses may be offered with a grade below 60 percent. Applicants from outside the province of Ontario must present

acceptable equivalent certificates generally required for admission to universities in their own provinces or countries. Applicants should note that meeting the minimum requirements stated above does not guarantee admission to the B.Sc. programs.

Students presenting OAC (or equivalent) averages lower than those stated above might be admissible on an individual basis after consideration of whether there are special circumstances which would permit their admission.

Advanced Standing

1. To be admitted to Second year a student must have completed the equivalent of the First-year Science program with the required academic standing.

2. Applications for admission to the Third or subsequent years will be evaluated on their merits, and advanced standing granted for studies undertaken elsewhere when these are recognized as the equivalent of subjects offered at Carleton University.

3. Students not admitted to a degree program but taking courses at Carleton University as Special students may, on transfer to a Science degree program, receive credit for not more than 7.0 credits, 4.0 of which must meet the First-year promotion requirements.

Bachelor of Science Honours Program

First Year

1. The successful completion of 5.0 credits approved for a Qualifying-University year Science program with a GPA of 8.0 or better, including a core of 0.5 credit in calculus and 2.5 credits chosen from biology, chemistry, geology, physics or mathematics. In addition a GPA of 8.0 or better is required in the three-credit core. The grade offered in calculus must be C- or better. No more than one of the two and one half remaining core credits may be offered with a grade below C-; or

2. The OSSD including six OACs with an average of 75 percent or better, or equivalent, including a core consisting of one OAC in calculus and at least two OACs chosen from algebra and geometry, biology, chemistry, and physics. In addition, an average of 75 percent or better is required in the core OACs. The grade offered in OAC calculus must be 60 percent or better. No more than one of the two remaining core courses may be offered with a grade below 60 percent.

For Honours in Psychology, an OAC in English is recommended.

Students presenting credits for one or more repeated subjects or courses may not be admitted directly into an Honours program except on the recommendation of the department or committee concerned. Applicants should note that meeting the minimum requirements stated above does not guarantee admission to the B.Sc. programs. Students presenting OAC (or equivalent) averages lower than those stated above might be admissible on an individual basis after consideration of whether there are special circumstances which would permit their admission.

Advanced Standing

1. An in-course student wishing to enter an Honours program must apply to the Chair of the appropriate department or committee through the Office of Registrarial Services for the Faculty of Science.

2. For entry to an Honours program after the completion of First year, a student must have a GPA of 6.0 or better in the Honours subject(s), an overall GPA of 4.0 or better and the recommendation of the Honours department or committee. A student beginning the final 5.0 credits towards an Honours degree must present a GPA of 6.5 or better in the Honours subject or in each Honours subject and a GPA of 5.0 or better overall, as calculated for graduation.

3. Students applying for admission to Honours in Science at Carleton after having obtained a degree from Carleton or another university shall meet the same criteria as specified above.

4. No student may be admitted to Honours in Science without satisfying the requirements for entry to the corresponding Major program.

5. While the consent of the department or committee concerned is necessary for entry to an Honours program, the department cannot establish a standard of entrance based on a GPA which is higher than that established by the faculty as set out in the foregoing paragraphs. Students who consider that they meet the requirements for entry to an Honours program but who have not been accepted by any department may appeal to the Science Committee on Admission and Studies for review of the case. The Committee will report to the Science Faculty Board on all such appeals. It should be noted, however, that departmental capacities to accept all qualified Honours candidates may be limited by physical resources.

6. Students in the final year of a Major degree program wishing to be considered for entry to an Honours program must apply to the Office of Registrarial Services for the Faculty of Science to have their names withdrawn from the graduation list before March 1 of that year. If subsequently the student is not accepted for an Honours program, the student must reapply for graduation.

Course Requirements

Qualifying-University Year in Science

A Qualifying-University year is offered for students who do not have the equivalent of the OSSD with six OACs. The program consists of the following 5.0 credits:

1. Mathematics 69.007★;
2. 2.5 credits selected from Chemistry 65.010, Physics 75.105, Biology 61.103★ and 61.104★, Geology 67.100 or 67.105, Mathematics 69.017★;
3. 2.0 other credits selected from any of the foregoing subjects not already presented and from other courses approved for a Qualifying-University year Science program as follows:
Science: Biology 61.103★ and 61.104★, Chemistry 65.010, Geology 67.100 or 67.105, Physics 75.105, Mathematics 69.017★.

Arts or Social Sciences: Any Arts or Social Sciences course for which the student has the required prerequisite.

Computer Science: Any Computer Science course for which the student has the required prerequisite except 95.100★ and 95.101★.

First Year

The First-year program leading to the degree of Bachelor of Science consists of 5.0 credits approved for a First-year Science program including:

- (a) 2.0 experimental Science credits chosen from two different departments of Biology, Chemistry, Geology or Physics;
- (b) 1.0 Science credit chosen from an approved third different experimental Science or approved credits in Mathematics or Computer Science;
- (c) 2.0 additional credits chosen from Science (not 60.100), Mathematics, Arts, Social Sciences, (except Interdisciplinary Social Sciences 03.300★); Computer Science (except Computer Science 95.100★ or 95.101★) or Engineering.

Students who have declared a Major or Honours in a Mathematics program in their First year may replace one of the experimental Sciences under (a) by 1.0 credit in Computer Science (except Computer Science 95.100★ or 95.101★).

In establishing their First-year program of courses, students should consult with the chair of their Major department, the chair of the Environmental Science Committee, the chair of the Integrated Science Studies Committee, or the chair of the appropriate inter-departmental committee. Students who have not yet selected a Major field should select those First-year courses that will give them a wide choice of fields for the Second year.

Courses Approved for a First-Year Science Program

Science Courses

Biochemistry

63.220★ Cell Physiology and Biochemistry

Biology

61.103★ Introductory Biology I

61.104★ Introductory Biology II

or if these courses have been completed prior to First year, with permission, any two of:

61.201★ Animals: Form and Function

61.202★ Plants: Form and Function

61.214★ Introductory Genetics

61.220★ Cell Physiology and Biochemistry

Chemistry

65.010 Introductory Chemistry

65.100 General Chemistry; or if this course has been completed prior to First year, with permission:

65.210 Physical Chemistry

65.220 Organic Chemistry

65.230 Analytical Chemistry

65.231★ Analytical Chemistry

- 65.280★ Foundations For Environmental Chemistry

Computer Science

- 95.102★ Introduction to Computers
 95.103★ Introduction to Scientific Computing
 95.104★ Introduction to Computers for the Sciences
 95.105★ Introduction to Programming
 95.106★ Computer Applications
 95.107★ Introduction to Structured Programming
 95.108★ Structured Programming Applications

Geography

- 45.105 Introduction to Geoscience

Geology

- 67.100 Principles of Geology
 67.105 Introduction to Geoscience; or if one of Geology 67.100 or 67.105 has been completed prior to First year, with permission, any two of:
 67.221★ Crystallography and Optical Mineralogy
 67.223★ Optical Mineralogy
 67.228★ Petrography and Geochemistry of Igneous Rocks
 67.231★ Invertebrate Paleontology and Historical Geology
 67.232★ Concepts of Stratigraphy and Sedimentary Facies
 67.238★ Earth, Resources and Society
 67.281★ Field Geology I
 67.282★ Field Geology II

Mathematics

- 69.017★ Algebra and Geometry
 69.107★ Elementary Calculus I
 69.117★ Linear Algebra I
 69.102 Calculus
 69.112 Algebra
 69.201 Intermediate Calculus
 69.202 Intermediate Mathematics
 69.207★ Elementary Calculus II
 69.217★ Linear Algebra II
 69.241★ Mathematical Methods for Scientists
 69.257★ Introduction to Statistics or any Mathematics course for which the student has the prerequisite.

Physics

- 75.101★ Introductory Physics I
 75.102★ Introductory Physics II
 75.105 Elementary University Physics, or if one of 75.101★ and 75.102★ or 75.105 has been completed prior to First year, with permission, any two of:
 75.211★ Mechanics and Properties of Matter
 75.222★ Wave Motion and Optics
 75.223★ Astronomy
 75.224★ Astrophysics and Cosmology
 75.235★ Electricity and Magnetism
 75.236★ Physics of Electrical and Electronic Measurements I
 75.262★ Modern Physics I
 75.291★ Physics of the Environment I
 75.292★ Physics of the Environment II

Arts and Social Sciences Courses

Any course available to a First-year Arts or Social Sciences student with the exception of:

- (a) Social Sciences courses as listed on p. 110. Advanced courses in certain disciplines may be included if the prerequisite has been completed prior to First year;
 (b) any Computer Science course (including Interdisciplinary Social Sciences 03.300★);
 (c) any course offered by the Departments in the Faculty of Science and;
 (d) any Engineering course.

Courses for Subsequent Years

Major Program

Candidates will ordinarily take at least 10.0 credits beyond the completion of First year:

- (a) at least 4.0 more credits in the Major subject;
 (b) at least 2.0 Science credits above the First-year level in a department or departments other than the Major department;
 (c) sufficient electives to meet the program requirement of 2.0 Arts or Social Sciences elective credits and 1.0 free elective credit.

The program of each student is under the direct supervision of a full-time member of the department in which the student takes his or her Major. In several departments most of the more advanced courses will be given, in whole or in part, during the day only. Candidates are advised to consult their Major departments as early as possible to arrange their programs.

Environmental Science Program

For course requirements see p. 263.

Integrated Science Studies Program

For course requirements see p. 346.

Combined B.Sc./M.Sc. Program

For course requirements see p. 401.

Honours Program

Students for a degree with Honours will ordinarily take at least 15.0 credits beyond the completion of First year. (See Honours admission requirements, p. 107 regarding transfers to the Faculty of Science from other institutions or faculties):

- (a) at least 6.0 more credits in the Honours subject;
 (b) at least 2.0 Science credits above the First-year level in a department or departments other than the Honours department;
 (c) sufficient elective credits to meet the program requirements of 2.0 Arts or Social Sciences elective credits and 1.0 free elective credit.

For continuance in an Honours program, the student must maintain a GPA of 6.0 or better in the Honours subject(s), an overall GPA of 4.0 or better and be recommended by the Honours department or committee. At the beginning of their last 5.0 credits students must have:

- (a) a GPA of 6.5 or better in the Honours subject or

- in each Honours subject;
- (b) an overall GPA of 5.0 or better;
- (c) a grade of C- or better in at least half of the credits to be credited toward their degree;
- (d) the recommendation of their Honours department or committee. Otherwise the student may not remain in Honours;
- (e) students who have a GPA of 6.3 or 6.4 in their Honours subject may be allowed to continue at the discretion of the individual Department, Institute or Committee.

Note:

B.Sc. Combined Honours programs with Computer Science have a higher GPA requirement for continuance than that stated above. Please refer to the appropriate departmental section of this Calendar for further details (p. 429 for the Department of Physics or p. 388 for the Department of Mathematics and Statistics).

The combined B.Sc./M.Sc. program has a higher GPA requirement for continuation than that stated above. Please refer to the Department of Mathematics and Statistics departmental section for more details. (See p. 401).

The course patterns for each Honours program are detailed individually, and requirements lie within the discretion of the appropriate department or committee. The student should therefore read the appropriate Calendar instructions and consult the chair of the appropriate department or committee. Capacities for Honours students will depend on departmental resources and the nature of the program.

Regulations governing Honours essays, theses or special projects are detailed in the departmental sections of this Calendar.

A student who fails to maintain Honours standing may not remain in Honours, and must discuss a new program with the chair of a department.

Science Continuation Courses

1. All courses offered in the Faculty of Science beyond First year except Science 60.200, Biology 61.216★ and 61.393★ and Geology 67.383★.
2. All courses offered in Computer Science except Computer Science 95.100★ and 95.101★. A maximum of two half credits at the 100-level in Computer Science (excluding 95.100★ and 95.101★ completely) may be used as Science Continuation course credits. For students in any program offered by the Department of Mathematics and Statistics, Computer Science courses that are cross-listed with Mathematics courses are not acceptable as Science Continuation courses.

Technology, Society, Environment (TSE) 59.300, 59.350★, 59.401★, 59.402★, 59.403★, 59.405★, 59.406★. (Biology Major and Honours students may use these courses only as free electives. Integrated Science Studies students may take these courses as part of their program but may not count them as part of their science sequence.)

Geography 45.210★, 45.211★, 45.302★, 45.303★, 45.307★, 45.311★, 45.312★, 45.313★, 45.315★, 45.318★, 45.319★, 45.400★, 45.402★, 45.403★,

45.406★, 45.411★, 45.412★, 45.413★, 45.414★, 45.417★, 45.418★.

Psychology 49.200, 49.220★, 49.270★, 49.300, 49.320, 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.356★, 49.370, 49.372★, 49.380, 49.401★.

3. All courses offered in the Bachelor of Engineering program beyond First year, subject to the approval of the Faculty of Engineering.

Notes:

1. Science 60.100, Computer Science 95.100★ and 95.101★ and Interdisciplinary Social Sciences 63.300★ are not acceptable for credit in the Faculty of Science. For students in programs offered by the Department of Mathematics and Statistics, Mathematics 69.241★ is not acceptable for credit.
2. The following courses are acceptable only as free electives for Science students: Biology 61.192★, 61.216★, 61.393★, Chemistry 65.103★, 65.107, Geology 67.104★, 67.383★, Mathematics 69.185★, Physics 75.190, Science 60.200. In addition, Interdisciplinary Social Sciences 03.401★ and 03.402★ are acceptable only as free electives.
3. All Science Continuation courses taken outside the Major department must be approved by the student's Major department or committee.
4. Courses counted in the Science sequence of the Integrated Science Studies Program will be determined and approved by the Integrated Science Studies Committee.
5. Biology Major and Honours students should refer to *Notes on Programs* (p. 155) for special Science Continuation course provisions that apply to them.

Social Sciences Courses not Acceptable as Social Sciences Electives

Business

42.101★, 42.102★, 42.104★, 42.105★, 42.140★, 42.200, 42.230★, 42.270★, 42.301★, 42.308★, 42.400★, 42.401★, 42.402★.

Economics

43.220, 43.240★, 43.404★, 43.405★, 43.476★, 43.477★.

Geography

45.105, 45.210★, 45.211★, 45.302★, 45.303★, 45.307★, 45.311★, 45.312★, 45.313★, 45.315★, 45.318★, 45.319★, 45.400★, 45.402★, 45.403★, 45.406★, 45.411★ (Geology 67.415★), 45.412★, 45.413★ (Engineering 82.441★, Geology 67.419★), 45.414★, 45.417★ (Engineering 82.424★, Geology 67.424★), 45.418★.

Interdisciplinary Social Sciences
03.300★.

Psychology

49.200, 49.220★, 49.270★, 49.300, 49.320, 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.356★, 49.370, 49.372★, 49.380, 49.401★.

Sociology
53.370.

Academic Standing

Grading System

Standing in courses will be determined by departments and will be shown by alphabetical grades. (See p. 50).

Standings to represent special circumstances are as follows:

Aeg

Pass standing granted although absent from final examinations. Aegrotat standing is granted only by the Science Committee on Admission and Studies in response to a student's application which meets the stipulations for examinations.

Aud

Indicates course is not being taken for academic credit.

Ch

Credit granted under Challenge for Credit policy.

F

Failure. No academic credit.

FNS

Failure, but with supplemental privileges withdrawn because of incomplete term work or an unacceptably low mark in the examination. No academic credit.

Wdn

Withdrawn in good standing. No academic credit.

Ab

Failure due to absence from the final examination where the necessary term work has been completed. No supplemental privileges. No academic credit.

Def

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Science Committee on Admission and Studies for deferred examination privileges.

IP

In Progress.

Course Load

The normal course load for a full-time student in the Faculty of Science, during the Fall/Winter session, is the equivalent of 5.0 credits. The normal course load for a part-time student, in the Fall/Winter session, is the equivalent of 2.0 credits.

Students may register for a maximum of 2.0 credits in the Summer session, i.e. two Evening courses, or one Evening and one Day course, or two Day courses.

A student may exceed the normal course load in the Fall/Winter session only with the Registrar's permission, which may be granted if a C average is maintained overall and in the Major field, and if recommended by the Major department. Part-time students may be granted permission if a C average

is obtained in a minimum of 2.0 credits in the previous session.

Promotion and Failure

Full-time Students

Full-time students in First-year Science, in order not to fail their year in May, must, by then, have passed at least 3.0 credits. Students who fail to meet this requirement must apply by June 30 for readmission to the Faculty of Science; students who fail First-year Science for a second time are not eligible to apply for readmission to the Faculty of Science.

To be promoted to the credit system from First year, a full-time Science student must have passed at least 4.0 credits including at least 3.0 credits in Science. The 3.0 credits in Science must include at least 1.0 credit in each of two different experimental Sciences. The remaining Science credit may be chosen from an approved different experimental Science or from approved credits in Mathematics or Computer Science. Students who have declared a Major or Honours in a Mathematics program may replace one of the 2.0 required experimental Sciences with 1.0 credit in Computer Science. In addition, students must obtain grades of C- or better in at least 2.0 credits, including at least 1.0 credit in their intended Major.

For a student without advanced standing in any First-year courses, these 4.0 credits must be selected from those approved for a First-year Science program.

For a student (not repeating First year) with advanced standing in some First-year courses, these 4.0 credits must include sufficient courses to complete the First-year Science program; the remainder of the 4.0 credits may include courses beyond the First year provided the student has retained credit for the prerequisite First-year courses. In the Major program one of the grades of C- or better must be in the intended Major subject. In the Integrated Science Studies program, the student must have attained a grade of C- or better in 1.0 credit from each of the Science and Non-Science sequences.

This must be accomplished in one calendar year (12-month period) with not more than 2.0 credits of Summer courses, supplemental and grade-raising examinations. While in First-year Science, a student may write a maximum of two supplemental and grade-raising examinations (full and/or half credits). The course work of those First-year Science students who almost meet promotion requirements is reviewed by the Dean's Committee on Promotion.

A full-time student who does not meet the requirements of promotion by the end of August examinations will have failed First year.

Part-time Students

To be promoted to the credit system from First year, part-time students must, in the first 6.0 credits of final examinations, have passed at least 4.0 credits approved for a First-year Science program including at least 3.0 credits in Science. The 3.0 credits in Science must include at least 1.0 credit in each of two different experimental Sciences. The remaining Science credit may be chosen from an approved different experimental Science or approved courses in Mathe-

matics or Computer Science. Students who have declared a Major or Honours in a Mathematics program may replace one of the two required experimental Sciences with a credit in Computer Science. In addition, students must obtain grades of *C-* or better in at least 2.0 credits, including at least 1.0 credit in their intended Major. Part-time students who fail more than 2.0 full-credit equivalents in succession must apply for readmission to the Faculty of Science.

In the Major program, one of the grades of *C-* or better must be in the intended Major subject. In the Integrated Science Studies program, the student must have obtained a grade of *C-* or better in 1.0 credit from each of the Science and Non-Science sequences.

All Degree Students

Failed students within the limitations specified above may repeat First year, retaining credit toward their degree (but not toward the completion of First year) for all courses graded *C-* or better.

A student repeating First year may register only in courses approved for a First-year Science program, but may include 2.0 credits beyond the First year provided the student has retained credit for the prerequisite First-year course.

A student who fails First year a second time may not re-enter a degree program in the Faculty of Science.

After promotion to the credit system, the student will accumulate course credits under a pattern approved by the appropriate department or committee.

Supplemental Examination Privileges

While in First-year Science, a student may write a maximum of two supplemental and grade-raising examinations (full and/or half credits).

Major degree students have the privilege of writing supplemental or grade-raising examinations, or repeating or replacing courses, subject to the following restriction: After admission to the credit system the ratio of total number of (full-course equivalent) examinations to the total number of credits required may not exceed three to two. Students may write a maximum of three supplemental and grade-raising examinations (full and/or half credits) while on the credit system (pro-rated for the number of credits required to complete their degree requirements upon entry to the credit system). In particular, a student who requires ten more credits has the equivalent of at most 15 full-course examinations available to complete his or her program, including, at most, three supplemental and grade-raising examinations.

Honours degree students have the privilege of writing supplemental or grade-raising examinations, or repeating or replacing courses subject to the following restriction: After admission to the credit system, the ratio of total number of (full-course equivalent) examinations to the total number of credits required may not exceed six to five. Students may write a maximum of three supplemental and grade-raising examinations (full and/or half credits) while on the credit system (pro-rated for the number of credits required to complete their degree requirements upon entry to

the credit system). In particular, a student who requires 15 more credits has the equivalent of at most 18 full-course examinations available to complete the program, including, at most, three supplemental and grade-raising examinations.

The number of examinations available to a student who transfers from another institution or from another program, will be determined on a pro rata basis and will be specified at the time of admission.

When a student is examined in a course that previously has been declared extra to the degree program, this examination does not affect the remaining number of available examinations.

Students who cannot complete their program without exceeding the available number of examinations forfeit their undergraduate status in the Faculty of Science.

Graduation

General Regulations

1. Every student will be required to complete the last 5.0 credits at Carleton University unless authorized by the Faculty of Science to take a maximum of 1.0 of these last 5.0 credits at the University of Ottawa under the Undergraduate Exchange Agreement.
2. A student who takes courses elsewhere with a Letter of Permission from the Science Committee on Admission and Studies may, with the approval of the appropriate department or committee, use the credit value but not the grades to meet graduation requirements;
3. Students who transfer to the Faculty of Science from another institution must include in the courses presented for degree (whether obtained at Carleton or elsewhere) at least:
 - (a) 2.0 credits of Arts or Social Sciences electives if on transfer they received credit for less than ten credits;
 - (b) 1.0 credit of Arts or Social Sciences electives if on transfer they received credit for 10.0 or more credits.

Note:

See also University graduation regulations, p. 52.

Major Degree Students

To qualify for graduation students must:

1. present credits for 15.0 approved full courses (or equivalent) beyond Qualifying-University year with not more than 2.0 credits below the 100-level and not more than 7.0 below the 200-level;
2. have a grade of *C-* or better in at least half of the 15.0 credits;
3. have an average of *C-* or better in the credits in their Major subject or subjects;
4. after entry to the credit system, have completed the program with not more than three (full-course equivalent) examinations for every 2.0 credits required. (Examinations include supplemental and grade-raising examinations, course repetitions and

replacements, and can include, at most, three supplemental and grade-raising examinations.) Part-time students or full-time students who have interrupted their studies must complete the program within seven years after entry to courses beyond First year;

5. include at least 2.0 credits in the Major subject or subjects in the last 5.0 credits taken for credit;
6. be recommended by the Major department(s) and the Science Faculty Board.

To meet the requirements for the *C-* average in the Major stated above, only those credits in the Major necessary to make up the required total for graduation in the Major department need be counted. All obligatory courses must be counted.

Graduating students in a Major program of the Faculty of Science will be designated as graduating "with Distinction" if:

1. they have no course failures, course repetitions, course replacements or grade-raising examinations on their Carleton record after promotion to the course-credit system;
2. they have achieved an overall GPA of 8.0 or better calculated on their Carleton record, including all credits extra to the degree;
3. they have successfully completed at Carleton at least 10.0 credits counted toward the degree;
4. after promotion to the course-credit system, they have achieved a GPA of 9.5 or better calculated on all Carleton credits being counted toward the degree.

Environmental Science Degree Students

See p. 263.

Integrated Science Studies Degree Students

See p. 346.

Combined B.Sc./M.Sc. Students

See p. 401.

Honours Degree Students

To qualify for graduation with a Bachelor of Science degree with Honours a student must:

1. present credits for at least 20.0 credits of approved full credits (or equivalent) beyond Qualifying-University year, with not more than 2.0 credits below the 100-level and not more than 7.0 below the 200-level;
2. meet the requirements of the Faculty of Science and of the appropriate department or committee with respect to both course and grade requirements;
3. after entry to the credit system, have completed the program with not more than 6.0 (full credit equivalent) examinations for every 5.0 credits required. (Examinations include supplemental and grade-raising examinations, course repetitions and replacements, and can include, at most, three supplemental and grade-raising examinations.) A part-time student or a full-time student who has interrupted his or her studies must complete the program within seven years after entry to courses beyond First year;

4. include at least 2.0 credits in the Honours subject or subjects in the last 5.0 credits taken;

5. be recommended by the appropriate department or committee and the Science Faculty Board.

The Honours degree will not be awarded to students taking fewer than 5.0 credits at Carleton.

Designations of Honours Degrees

Three designations of Honours are awarded, determined on the basis of the GPA as follows:

Highest Honours

10.0 — 12.0 in Honours subject, and 8.0 or better overall

High Honours

9.0 or better in Honours subject, and 7.0 or better overall

Honours

6.5 or better in Honours subject, and 5.0 or better overall

Departments may recommend the higher designation of Honours degree in the case of a student one of whose indices is in the appropriate higher range and the other within 0.2 grade points of the higher range.

To determine the class of degree for students with Combined Honours, the average is computed on the basis of the weighted average of the required number of Honours credits in the two subjects. If agreeable to the committee concerned, the average may be taken in each of the two subjects and the simple average of the two may be used.

Departments may use discretion for establishing the class of degree in counting the number of Honours credits where students have more than the minimum number of credits.

Academic Clubs and Societies

The following clubs and societies operating on the campus serve to broaden and enrich the curriculum, and to offer students social activity and friendship related to their intellectual interests. The societies listed here are particularly pertinent for students registered in the Faculty of Science.

The Biology Society sponsors academic and social events, promotes informal contact between students and faculty, and helps acquaint students with on-going biological research.

The Canadian Society for Chemistry, through its Carleton University Student Chapter, is active in sponsoring a number of professional and social activities throughout the year.

The Carleton Computer Science Society (CCSS) is an active society looking to create ties to its membership. It works for its members in several ways: from informal academic support to varied athletic and social gatherings. Throughout the year the CCSS offers a t-shirt design contest, inexpensive course notes, free pizza and movie nights, the occasional faculty and grad hockey game, and the world's best programming contest. The year ends with a huge barbe-

que and one very special 'Late Night Debugging Session'.

The Geology Society sponsors lectures on geological topics, and organizes field trips and social events for all undergraduate students with an interest in geology.

CMASS, the Carleton Mathematics and Statistics Society, features "Naive-Level Seminars" designed by and for mathematics undergraduates. The society office promotes contact between students at different stages in their studies.

The Physics Society sponsors visits to government and industrial laboratories in the Ottawa area, arranges special lectures on physics topics and social events for those interested in physics.

Science Courses without Prerequisites and Recommended to Students in Other Faculties

Biology

- 61.192★ Natural History
61.393★ Biology and Development of Renewable Resources

Chemistry

- 65.103★ The Chemistry of Food, Health and Drugs
65.107 The Chemistry of Art and Artifacts

Geology

- 67.100 Principles of Geology
67.104★ Introduction to Earth Sciences
67.105 Introduction to Geoscience

Physics

- 75.190 Introduction to Astronomy

Science

- 60.100 Science for Today
60.200 Science of the Environment

Academic Administration

Dean

T. Wilkinson

Associate Dean (Research and Development)

L. Heslop

Associate Dean (Undergraduate Academic Affairs)

R. Wells

Assistant Dean/Registrar

D. McKenna

Secretary of the Faculty

R. Neill

Directory of Offices

Office of the Dean

D391 Loeb Building, 520-3741

Associate Dean (Research and Development)

D387 Loeb Building, 520-2600 ext. 8092

Associate Dean (Undergraduate Academic Affairs)

D386 Loeb Building, 520-3741

Assistant Dean/Registrar

D387 Loeb Building, 520-3902

Student Advising

D382 Loeb Building, 520-3902

Student Records

D382 Loeb Building, 520-3902

Anthropology, See Sociology and Anthropology

Biology, J.A. Webb, Chair

587 Tory Building, 520-3888

Business, V. Kumar, Director

710 Dunton Tower, 520-2382

Canadian Studies, P. Armstrong, Director

1206 Dunton Tower, 520-2366

Central/East European and Russian-Area Studies,

C. McMillan, Acting Director

459 Paterson Hall, 520-2886

Criminology and Criminal Justice, A. Forth,

Co-ordinator

D485 Loeb Building, 520-2588

Economics, D.J. McFetridge, Chair

C871 Loeb Building, 520-3744

Geographic Information Processing, M. Smith,

Co-ordinator

B433A Loeb Building, 520-2573

Geography, M. Smith, Chair

B349A Loeb Building, 520-2560

International Affairs*, M. Molot, Director

2A59 Paterson Hall, 520-6655

Institute for Interdisciplinary Studies, A. Brook, Director

2216 Dunton, 520-2368 or 520-3597

Child Studies, T. Daniels, Co-ordinator

Cognitive Studies, J. Logan, Co-ordinator

520-2368 or 520-2690

Directed Interdisciplinary Studies, C. Gordon,

Co-ordinator

520-2368 or 520-2603

Environmental Studies, N. Doubleday, Co-or-

dinator

520-2368 or 520-2600 ext. 8370

Law, T.B. Dawson, Chair

C473 Loeb Building, 520-3691

Mathematics and Statistics, V. Dlab, Chair

4302 Herzberg Physics, 520-2155

Native Studies, M.D. Stout, Director

B255 Loeb Building, 520-4494

Political Economy*, W. Clement, Director

A818 Loeb Building, 520-7414

Political Science, V.S. Wilson, Chair

B640 Loeb Building, 520-2777

Population Studies, C. McKie, Co-ordinator

A706 Loeb Building, 520-2626

Psychology, W. Jones, Chair

B589 Loeb Building, 520-2648

Public Administration, F. Abele, Director

1021 Dunton Tower, 520-2547

Social Work, A. Moscovitch, Director

469 St. Patrick's Building, 520-5601

Sociology and Anthropology, J. Chevalier, Chair

D795, Loeb Building, 520-2583

Technology, Society, Environment Studies,

P. Kruus, Chair

460 Steacie Building, 520-4483

Women's Studies, D. Gorham, Director

A812 Loeb Building, 520-6645

*Graduate-level program. For details please see *Graduate Studies and Research Calendar*.

Degree and Certificate Programs

Registrarial Services

Assistant Dean/Registrar: D. McKenna

Student Advising: J. Clarke, R. Jones

Student Records: S. Bauer

Registrarial Services provided by the Faculty of Social Sciences are a source of general information on the academic programs within the Faculty of Social Sciences and on the regulations which apply within the Faculty. Specific information about course content, subject matter, and the structure of Pass or

Honours programs is obtainable from the academic departments within the Faculty.

The Faculty of Social Sciences offers programs in six degrees and two certificates.

Bachelor of Arts and Bachelor of Arts with Honours (B.A.)

The three-year Pass B.A. program provides a liberal university education of value either as a general intellectual preparation for a great number of non-specialized careers, or as an introduction to subsequent specialized study.

The four-year program of the Honours B.A. provides more rigorous and extensive study in one or two disciplines. The Honours degree is necessary for entry to certain fields of employment, and is a desirable preparation for graduate studies and professional training, including teaching.

Bachelor of Commerce (B.Com.)

The four-year Honours program in Commerce provides a foundation in the disciplines essential to careers in business. The program is offered by the School of Business.

Bachelor of International Business (B.I.B.)

The four-year Honours program integrates language training and a year of study abroad with a specialist professional program to provide students with the knowledge, skills and orientation necessary to function effectively in the area of international business.

Bachelor of Public Administration (B.P.A.)

The four-year Honours program provides a foundation in the disciplines relevant to the practice of public administration. The program is offered by the School of Public Administration.

Bachelor of Social Work (B.S.W.)

The Bachelor of Social Work Honours program combines a liberal arts education with professional preparation. The primary objective of the program is to provide students with the knowledge and skills necessary to begin entry level practice in social work.

Certificate in Public Service Studies (C.P.S.S.)

This is a 6.0 credit program in public service subjects at the undergraduate level. The program is offered by the School of Public Administration.

Certificate in Law Enforcement Studies (C.L.E.S.)

This is a 6.0 credit program designed for persons employed in the area of law enforcement, national security or corrections. The program is co-ordinated by the Departments of Law and of Sociology and Anthropology.

Part-Time Study

Part-time study is available method of attaining a degree in the Faculty of Social Sciences.

Part-time students who wish to limit their studies to evening and summer times should note that the following departments teach a range of courses in the evening and during the summer that will permit students to complete a pass degree in their discipline.

Economics	Political Science
Geography	Psychology
Law	Sociology/Anthropology

Students have the choice between full- and part-time registration and may freely alternate between the two.

Students wishing to pursue an Honours degree on a part-time basis are urged to consult with the appropriate department(s) about the scheduling of courses.

Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about **itv** refer to p. 67 of this Calendar.

(Arts)

215 Paterson Hall
Telephone: 520-6613

Academic Administration

Director
Ian Pringle

Co-ordinator, English as a Second Language, Credit Programs
Margaret Kersten

Co-ordinator, Asian, Indigenous, Middle Eastern and Sign Languages Unit
George Chouchani

Co-ordinator, English as a Second Language, Intensive Programs
Marilyn Weir

Co-ordinator, Language Testing Unit
Janna Fox

Co-ordinator, Writing Tutorial Service
Janna Fox

Teaching Staff

Professors
Aviva Freedman
Ian Pringle

Associate Professors
Devon Woods
Lynne Young

Assistant Professor
Pat Currie

Instructors
George Chouchani
Janna Fox
Catherine MacNeil
Trudy O'Brien
Renata de Pourbaix
Yoko Azuma Prikryl
Emi Sakamoto-Jog

English Language Teachers
Geri Dumouchelle
Andi Gray
Barbara Greenwood
Margaret Kersten
Linda Librande
Adrienne Soucy
Petra Watzlawik-Li
Marilyn Weir
Lysbeth White
David Wood

Language Instructors
American Sign Language Charlene LeBlanc
Arabic George Chouchani
Cree Mary Lou lahtail
Hebrew To be announced
Indonesian/Malaysian Mui Lian Leduc
Japanese Emi Sakamoto-Jog
Korean Hizung Matsuura
Mandarin Chinese Han Hongju
Thai Ratana Saralertsophon
Vietnamese To be announced

General Information

The Centre of Applied Language Studies exists to foster the development of activities in language teaching and learning, including research and publication. The Centre functions by providing links between those units that have a service function in common, and co-ordinates activities in language studies for specific and functional purposes.

The Centre comprises seven units: the Intensive ESL Unit, the Credit ESL Unit, the Language Resource Unit, the Writing Tutorial Service, Carleton University Writing Consultant's, the Language Testing Unit, and the Asian, Indigenous, Middle Eastern and Sign Language Unit.

English as a Second Language Unit

The English as a Second Language (ESL) Unit offers a number of types of courses for students for whom English is not the native language, including credit courses, and non-credit courses. The non-credit courses are offered on a full-time basis (as the Intensive Courses) or on a part-time basis (individual courses related to specific language needs). In addition, the ESL Unit develops and carries out specialized courses for client groups based on their academic or professional needs including the non-credit Diploma in English as a Foreign Language: English Language and Methods for International Teachers, and the non-credit Diploma in English for Business Communication.

The ESL Unit also engages in research activities related to analysis of students' language needs, development of methodologies and materials for teaching, and development of methodologies and materials for self-directed learning, and assessment of language activities through testing.

Credit Course Information

The courses are designed to meet the needs of students who are qualified for admission to any faculty but whose native language is not English, and whose scores on the Carleton Academic English Language (CAEL) Assessment or other tests recognized by the University indicate they would encounter serious difficulties in a full academic program. No student who has native or native-like command of English is permitted to take any of these courses.

The aim of these courses is to train students for university work. E.S.L. 21.130 is specifically for Canadian residents and citizens who have had little or no previous experience with academic English. The focus for the Intermediate English (E.S.L. 21.150) and Advanced English (E.S.L. 21.190) is on listening to lectures and extended discourse, note-taking, writing essays and papers and participating in group seminar work. E.S.L. 21.195 is a similar course but is concerned specifically to address the needs of students in the Faculty of Engineering. The focus in Advanced Writing (E.S.L. 21.196★) is specifically related to developing skill in preparing, writing, revising and editing papers and reports for academic and professional purposes.

Placement in these courses is determined by the Carleton Academic English Language (CAEL) Assessment. No challenges for credit can be made for credit in E.S.L. A maximum of 2.0 credits in E.S.L. may count toward a student's degree.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

English as a Second Language 21.130 Introductory English as a Second Language for Academic Purposes

For students who have little or no experience with academic English. The course focuses first on general proficiency in English, and second on proficiency in English for academic purposes, with a strong emphasis on those skills necessary for success at university.

Prerequisite: Placement by the Carleton Academic English Language Assessment.
Not open to visa students.
Nine hours a week (one term).

English as a Second Language 21.150 Intermediate English as a Second Language for Academic Purposes

For students with basic grammatical and oral competence in English but only limited experience in using English for academic purposes. This course helps to develop skills in understanding and producing appropriate English in an academic setting. Work is done on effective reading, listening to lectures, note-taking, researching and writing essays and reports, and participating in group seminars.

Prerequisite: English as a Second Language 21.130 or placement by the Carleton Academic English Language Assessment.
Six hours a week (one term).

English as a Second Language 21.190 Advanced English as a Second Language for Academic Purposes

For students with fairly good command of English who need further language support in the area of academic studies. There is a focus on increasing the effectiveness and speed of reading and on the under-

standing of complex oral and written texts. Extensive work is done on the developing of research skills, on the organization and writing of essays, and on the preparation and presentation of oral reports.
Prerequisite: English as a Second Language 21.150 or placement by the Carleton Academic English Language Assessment.
Six hours a week (one term).

English as a Second Language 21.195 Advanced English as a Second Language for Engineering Students

For students of Engineering and Industrial Design with a fairly good command of English who need further language support in the area of academic studies and communication for engineering purposes. There is a focus on: (i) reading Engineering text, e.g. case studies, project descriptions, and relevant academic materials, (ii) listening to lectures, reports and presentations, (iii) writing for Engineering, i.e. projects, summaries, laboratory reports, administrative/business communications, (iv) making oral presentations.

Prerequisite: English as a Second Language 21.150 or placement by the Carleton Academic English Language Assessment.
Three hours a week (two terms).

English as a Second Language 21.196★ Advanced Writing for English as a Second Language

For advanced second-language students who need the ability to write academic papers in English, and who wish to develop effective methods for doing so. This course focuses on strategies for generating ideas; combining, organizing, and structuring information from several sources; and expressing ideas effectively, clearly and grammatically.
Three hours a week (one term).

Asian, Indigenous, Middle Eastern and Sign Languages

Course Information

In addition to E.S.L. courses, the Centre for Applied Language Studies assumes the responsibility for teaching the University's credit courses in Mandarin Chinese, Thai, Japanese, Korean, Arabic, Indonesian/Malaysian, Hebrew, Vietnamese, Indigenous languages and American Sign Language. Some of these are intensive courses, requiring eight hours of class-time per week in addition to regular laboratory and other out-of-class assignments.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Mandarin 23.110**Intensive Introductory Mandarin (2.0 credits)**

An intensive course designed for students with little or no knowledge of Mandarin. The course includes an introductory section on "survival" oral Mandarin. The remainder of the course aims to ensure a basic grasp of Mandarin pronunciation and syntax, and basic oral comprehension, reading, writing and composition.

Not open to students already literate in Chinese (whether native speakers of Cantonese, Fukien, Hakka, etc.) Non-literate speakers of Chinese languages will be subject to a placement test which may rule them inadmissible to the course.

Eight hours a week.

Thai 23.115**Intensive Introductory Thai (2.0 credits)**

An intensive course designed for students with little or no knowledge of Thai. The course includes an introductory unit on "survival" oral Thai. The remainder of the course aims to ensure a basic grasp of Thai pronunciation and grammar, with equal weight given to oral comprehension, speaking, reading, writing and composition.

Eight hours a week.

Japanese 23.120**Introductory Japanese (2.0 credits)**

An intensive introductory course in spoken and written Japanese. The course includes an introductory unit on "survival" oral Japanese. The remainder of the course aims to ensure a basic grasp of Japanese morphology and syntax, with equal weight given to oral comprehension, speaking, reading, writing and composition.

Precludes additional credit for Japanese 23.121.

Eight hours a week.

Japanese 23.121**Low Intermediate Japanese**

For students who have had at least one year of Japanese in high school. Continuation of the study of Japanese to reach by the end of the year a comparable level of proficiency to students who complete Japanese 23.120. The course addresses all skills, but emphasizes the development of reading and writing, and in particular the ability to recognize, read and write a large number of kanji.

Precludes additional credit for Japanese 23.120.

Prerequisites: At least one year of high school Japanese, or equivalent ability.

Four hours a week.

Japanese 23.230**Intermediate Japanese**

Using a variety of teaching methods, this course takes students from successful completion of the introductory course to a stage where they are able to use Japanese at a more advanced level in a range of situations. The course emphasizes oral and written language equally.

Prerequisite: Japanese 23.120 or equivalent, or a minimum of two years of Japanese as a second language at secondary school. Students must have an ability to read and write both hiragana and katakana and have some knowledge of kanji characters.

Three hours a week.

Japanese 23.320**Advanced Japanese**

Continuation of Intermediate Japanese. This course uses a variety of teaching methods and intends to take students from the intermediate level to a more advanced level where they can handle authentic materials such as newspapers, short stories, television and radio broadcasts, including news broadcasts, and primary texts required for the academic studies in such fields as Asian Studies, Business, Economics, History, Political Science, International Affairs, etc.

Prerequisite: Japanese 23.220 or equivalent.

Three hours a week.

Korean 23.125**Intensive Introductory Korean (2.0 credits)**

An intensive course designed for students with little or no knowledge of Korean. The course includes an introductory unit on "survival" oral Korean. The remainder of the course aims to ensure a basic grasp of Korean pronunciation and grammar, with equal weight given to oral comprehension, speaking, reading, writing and composition.

Eight hours a week.

Arabic 23.130**Intensive Introductory Arabic (2.0 credits)**

An intensive introduction to Modern Standard Arabic designed for students with little or no knowledge of Arabic. The course teaches intermediate spoken proficiency in one of the major dialects of spoken Arabic, familiarizes students with written forms of Modern Standard Arabic, and teaches introductory composition. Not open to native speakers of Arabic.

Eight hours a week.

Indonesian and Malaysian 23.140**Introduction to Indonesian/Malaysian**

An introduction to the standard language of Indonesia and Malaysia. The course aims to ensure a basic grasp of the syntax and morphology of Bahasa Indonesia and Bahasa Malaysia, with an emphasis on speaking and listening. Not open to native speakers of Bahasa Indonesia and Bahasa Malaysia.

Four hours a week.

Hebrew 23.150**Modern Spoken Hebrew (2.0 credits)**

An intensive introduction to Modern Hebrew, with emphasis on speaking and listening.

Eight hours a week.

Vietnamese 23.160**Vietnamese Language and Culture**

Advanced spoken and written Vietnamese. Selected readings from prose, including literature in Vietnamese in the modern period (1930-1975) and from the literature of the diaspora (since 1975).

Prerequisite: Grade 12 credit in Vietnamese, or equivalent ability.

Four hours a week.

Applied Language Studies 23.190**Introductory Study of an Indigenous Language**

An introduction to the study of an indigenous language. Language for 1996-97: Ojibwe.

Four hours a week.

Sign Language Studies 23.191

Introduction to American Sign Language

A course designed for students with little or no knowledge of the language or culture of Deaf people. The course develops basic communicative competence in American Sign Language, a language whose medium of expression is gestural, whose medium of reception is visual, and whose structure is shaped by these media. The course includes anthropological, sociolinguistic, and sociocultural aspects of Deaf culture and the Deaf community, and their relation to a larger hearing culture.

Three hours a week.

Applied Language Studies 23.195

Intensive Introductory Study of an Indigenous Language (2.0 credits)

An intensive introduction to the study of an indigenous language.

Eight hours a week.

Resources and Services

The Centre is responsible for the Language Testing Unit, the Language Resource Unit, Writing Tutorial Service, and Carleton University Writing Consultants.

Language Testing Unit

The Language Testing Unit prepares and administers the Carleton Academic English Language (CAEL) Assessment and other placement and proficiency tests in English as a Second Language for the Centre, administers the Michigan (MELAB) test, conducts research and development activities in language testing, and offers a consultancy service on language testing both within the University and outside.

Language Resource Unit

The Language Resource Unit houses the laboratory and the language-laboratory-by-telephone system. It holds audio, video and print materials for language learning. It has facilities for specialized courses in many foreign languages which can meet special language requirements of particular groups.

Writing Tutorial Service

The Writing Tutorial Service offers a flexible and multi-faceted approach to the teaching of writing at the University. The program consists of individualized tutorials, supplementary workshops on style, mini-courses on the principles of academic writing in general, and seminars on the finer points of discipline-specific writing (such as the writing of law essays and examinations). In addition, the service is regularly called on to deal with special writing problems arising in specific courses or disciplines by designing individual ancillary programs in response to, and in consultation with, the instructors in those disciplines. The service also sponsors and conducts research on the acquisition, development, and improvement of writing abilities in the university context.

Carleton University Writing Consultants

Carleton University Writing Consultants is an extension of the Writing Tutorial Service that provides teams of consultants to diagnose writing problems in the workplace, analyze patterns of written communication in the workplace, and provide appropriate in-house writing instructions, usually on an individualized tutorial basis.

202 Architecture Building
Telephone: 520-2855

Academic Administration

Director

B. Gianni

Director, Architectural Research Group

B. Gianni

Registrar

G. Bauer

Teaching Staff

Professors

G. Andonian

N. Griffiths

S.G. Haider

S. Loten

D. Westwood

Associate Professors

B. Bell

M. Bressani

F. Carter

T. Dubicanac

B. Gianni

C.C. Gordon

E. Kayari

P. Sharp

N. Subotincic

G.F. Sutton

Instructor

J. Molder

Adjunct Professors

J. Flanders

J. Strutt

Adjunct Research Professors

J. Archer

J. Cook

J. Dalibard

S. Hensel

G. MacDonald

B. Padolsky

A. Rankin

J. Smith

Sessional Lecturers

J. Archer

H. Cameron

Y. Cazabon

J. Cook

M. Crier

R. Cunliffe

J. Davies

J. Diamond

B. Eames

S. Fai

B. Firestone

L. Fontein

T. Fuglem

G. Fulton

J. Henley-Grant

S. Hensel

M. Nagy

S. Painter

J. Rath

R. Seaker

N. Semanyk

J. Smith

M. West

T. Wolstenholme

Photographic Supervisor/Instructor

D. Lepage

Bachelor of Architecture Degree Program

The Bachelor of Architecture degree is awarded on the successful completion of a five-year program of studies. Candidates should note that due to the intensity of the program, students often choose to take more than five years to complete their degree. Like the profession of Architecture, the educational program can be rigorous in its dual demands of academic production and design creativity. Students who do not manage their time effectively may suffer stress which may, in turn, affect their performance in the program. It is recommended that full-time students do not engage in employment during the Fall/Winter session. The curriculum at Carleton is expected to provide the student with the theoretical, technical and formal knowledge and skill necessary for creative and responsible intervention in the built environment. In order to investigate and generate project proposals, the architect should be endowed with a range of sensibilities that emerge as synthetic vision in the design studio. The program has two components relating to this: a core, which is mandatory and provides the essential knowledge and experience; and a series of elective course choices becoming more extensive in the upper years, allowing students to develop their own areas of architectural interest.

The degree is recognized by The Canadian Architectural Certification Board as a prerequisite to apply for certification of academic qualifications for registration to practise as an architect in provincial associations, subject to assessment of each applicant's academic record by the Board. Information concerning mandatory work experience and other requirements for registration may be obtained from the professional associations of Canada and the Commonwealth.

The resources of the Ottawa area, including those of Carleton University, are unique in their concentration of specialized personnel, laboratories, libraries and other facilities. They provide the opportunity and capability for a wide range of multidisciplinary academic and research programs in such fields of architecture as housing, urban studies, industrialized building and history and theory of architecture.

Combined B.A. (Pass) and B.A. (Honours) Degree in Art History and Architecture

The School of Architecture co-operates with the School for Studies in Art and Culture in offering Combined B.A. (Pass) and B.A. (Honours) degrees in Art History and Architecture. (See p. 141.)

Academic Clubs and Societies

SAAS, School of Architecture Association of Students, organizes special events several times a year, and is a focus for student discussion.

Forum Lecture Series: The School of Architecture plans and organizes a series of public lectures on contemporary issues in architecture and related fields.

Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about *itv* refer to 67.

Regulations

The following regulations apply to all students enrolled in the School. Students are urged to seek the advice of their instructors on all questions about the regulations, and in particular before taking any action affecting promotion and probation, withdrawal, transfer of credit, appeals and review of grades.

The undergraduate Architecture program was revised in 1992. Students admitted in 1992 or later follow the new program as it appears in this Calendar. Students admitted earlier than 1992 will normally follow the Calendar of the date of their entry.

Student Responsibility

The student is responsible for knowing the regulations of the School of Architecture and for complying with them. Any exceptions to the regulations must be approved in writing by the School of Architecture Committee on Standing, Promotion and Awards (CSPA).

Exceptions to the Regulations

Regulations may be waived for academic, medical or compassionate reasons. The CSPA is responsible to the Curriculum/Management Committee and to Faculty Board for considering students' requests for special consideration regarding the regulations. Requests should be made in writing to the Chair of that committee.

Admission and Readmission Requirements

First Year

To be eligible for admission to the First year of the program of studies leading to the Bachelor of Architecture degree, the applicant must have passed the Qualifying-University year examinations at Carleton University in 5.0 credits with a GPA of 4.0 or better and a grade of C- or better in Mathematics and in Physics; or the OSSD or the equivalent with six OACs, including Calculus, Algebra and Geometry, and Physics, with an average of 65 percent or better.

Refer to the section on Admissions in the general regulations of the Calendar for additional admissions information. (See p. 31.)

Selective Admission

It should be noted that the number of student spaces in the School is limited. Because of this, it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success in the program through a portfolio of creative work, and academic grades. Members of the Admissions Committee of the School of Architecture are available by appointment during the academic year to answer enquiries regarding the School's program.

Advanced Standing

Applications for admission with advanced standing to the First or subsequent years of the program leading to the Bachelor of Architecture degree will be evaluated on an individual basis. Before students apply they should note that although the School may accept previous course work for credit, there is no guarantee that a registration committee such as the Canadian Architectural Certification Board will do so as credit toward professional registration. Advanced standing for academic subjects completed at another university or college may be accepted if the courses are recognized as the equivalent of corresponding courses offered at Carleton, or for a subject particularly appropriate to a degree in architecture provided they were not taken into account in establishing the level of admission. Advanced standing will only be recognized upon admission to the School and applications for advanced standing must be processed before the session deadline for course changes in the term in which the student is first enrolled.

Readmission

Students who have been absent from the University for two consecutive Fall/Winter sessions and the intervening Summer session (except students holding a Letter of Permission from the Carleton School of Architecture) are required to apply for readmission before registration.

Former students who have forfeited their undergraduate status must request readmission by writing to the Director of the school and the request must be accompanied by an updated portfolio of work. The decision whether or not to readmit will be made by

the Faculty Board. If readmitted, the student will return on probation.

Applications for readmission (obtainable from the Office of Admissions and Academic Records) must be filed before May 1 for the Fall/Winter session.

Proficiency in English

Since the instructional language of the University is English, applicants must be able to understand and be understood in English, both written and oral. Applicants whose mother tongue is other than English must clearly exhibit this ability. (See p. 31.)

Registration

Registration

In order to facilitate more effective academic planning for the following school year, students must declare their intention to continue in the program by July 1.

Students who have been absent from the University for one full Fall/Winter session (September through April) should notify the School by July 1 of their intention to register for the following Fall/Winter session.

Students are to complete their course registration by the registration periods shown for the session or term in the schedule for the Academic Year on p. 10.

Late Registration

Registration after the registration period incurs a late registration fee. Registration is not permitted after the late registration period.

Course Credit Value

Credit values are indicated against course descriptions. Courses marked ★ are half-credits, indicated 0.5 on record documents.

Course Load

The program in the School of Architecture is based on a course load of 6.0 credit equivalents for five years.

Student Records

Incorrect address information will delay the receipt of awards, examination results and changes in academic status. Students must notify the School and the Divisional Registrar's Office immediately of any change in permanent address.

Promotion and Continuation

Standing in Courses

Standing in courses will be determined by the School of Architecture. Standing in courses will be shown by alphabetical grades. (See p. 50).

Other notations are as follows:

Aeg

Pass standing granted under special circumstances.

Aegrotat standing is granted only by a faculty committee, in response to a student's application. (See Deferred Final Examinations, p. 51.)

Aud

Indicates course is not being taken for academic credit.

F

Failure. No academic credit.

FNS

Failure without access to supplementals because of incomplete term work or unacceptably low standing. No academic credit.

Abs

Absent from final examination. No supplementals. No academic credit. Abs is usually equated to failure.

Wdn

Withdrawn in good standing. No academic credit.

Def

Indicates that deferral of final grade has been approved by the CSPA. If the Deferred examination is not written at the time of the supplemental examinations of the session concerned, or if the work is not submitted by the agreed date the *Def* will be replaced by a grade based on the work completed prior to the granting of the deferral. (See also Deferred Final Examinations, p. 51.)

Ch

Credit granted under Challenge for Credit policy.

Computation of Averages

The 12-grade-point system is set out on p. 50. The grade points earned in any specific course are determined by multiplying the grade points corresponding to the grade by the credit value of the course. Thus an A+ in a 0.5 credit course will earn the student six grade points, while A+ in a 2.0 credit course would be worth 24 grade points.

GPA's are calculated by dividing the total accumulated grade points by the total credits. Promotion decisions are based only on courses taken while the student is registered in the Bachelor of Architecture degree program.

Promotion

Students who achieve the necessary cumulative GPA will be promoted to the next year of the program. In arriving at the cumulative GPA, all grades achieved while registered in the Bachelor of Architecture degree program are averaged.

Design Studio Courses (First to Fourth Years)

In each design studio course, a minimum grade of C- is required for the student to be eligible for promotion. Students who, during one year of the program, achieve a passing mark in one term and a D+, D, or D- in the other, and whose GPA in studio is 3.5 or better may apply to the School for a discretionary decision on promotion. These applications must be made prior to June 1. Students must submit their studio portfolio for review by faculty members teaching in that year. In these cases, a discretionary deci-

sion will be made to promote or to prescribe further study before promotion.

The student will be informed of this decision by the faculty members involved, in order to ensure that the student understands the deficiencies in his or her work and the suggestions that have been made to overcome them.

All Other Courses

In the combined courses without design studio, a GPA of 3.5 or better is required, to be promoted to the next year of the program.

Design Studio Course Sequence

During the first four years of the program, the Fall-term course must be taken before the Winter-term course.

Deficiencies

Students in program years One through Four who are not on probation but who have not more than 1.0 credit deficiency may proceed to the next program year. Students with more than 1.0 credit deficiency are not permitted to register in core courses in the next program year.

Students will not be permitted to register in Fifth-year core courses if they are deficient in any core courses or are carrying a deficiency of more than 1.0 elective credits from a previous program year.

Core course deficiencies may not be carried for two program years except with the written permission of the CSPA.

A studio which has been graded lower than a C- must be repeated unless a discretionary decision for promotion has been granted. Students will not advance to the next higher program year until the studio course has been successfully completed. However, students may register in non-studio courses in the next higher program year. Students may repeat a studio course only once; failure to obtain the required grade will result in students being required to withdraw from the program.

Students who have successfully repeated a studio course, but who receive a grade lower than C- in a subsequent studio course, will be required to withdraw from the program.

Students who have been required to withdraw from the program must wait for at least one academic year to become eligible for readmission to the program. If readmitted, the student will be placed on probation.

Probation

Students must maintain a cumulative GPA of 3.5 or better in non-studio courses to remain in good standing. In order to be eligible for promotion to the next higher program year, students must also obtain a grade of C- or better in each studio or have received a discretionary promotion.

Students whose GPA in non-studio courses falls below 3.5 (after any supplemental examinations), may proceed to the next higher program year on probation. Students have a maximum of one academic year to clear probation.

In order to return to regular status, students on pro-

bation must repeat and pass each failed course (except for electives, where a substitute course may be taken) and must, during the next academic year, raise their cumulative GPA in non-studio courses to 3.5 or better. If the required GPA is not achieved, the student will be required to withdraw from the program.

Students may repeat a failed course only once for the purpose of clearing probation.

Students who have cleared probation in the past, but whose grades in the subsequent year would lead to a second probation will be required to withdraw from the program.

Students who have been placed on probation, and who have either previously received or subsequently receive a grade lower than C- in a studio course will be required to withdraw from the program.

Students who have been required to withdraw from the program must spend at least one academic year away from school before applying for readmission. If readmitted, the student will return on probation.

Examinations

General regulations on examinations are on p. 50.

Supplemental Examination Privileges

A student may not write a supplemental examination in a course graded *FNS* or *Abs*. If a supplemental examination is failed, the student must repeat the course before writing another examination in it. Supplemental examinations must be written at the next supplemental examination period. Supplemental examinations are not offered in design studio.

Application to write supplemental examinations must be made at the appropriate Divisional Registrar's Office. Application must be made by the designated date (see Examination Charges, p. 59).

Grade-Raising Examinations

Students may, on application, write grade-raising examinations in courses already passed, and in which supplemental examinations are offered. Grade-raising examinations may be available in other courses with the approval of Faculty Board.

The grade awarded subsequent to a grade-raising examination supersedes the original final grade. A grade-raising examination in a course can be written only once and at the next scheduled examination period.

Only one grade-raising examination in the Fifth-year program (in either the self-initiated project, or design, or research thesis) will be permitted, with a maximum grade obtainable of C-.

Review of Grades

Students are entitled to a review of a final grade. Those wishing to receive such a review should enquire at the Office of Registrarial Services for the Division of Engineering, after which they may wish to make a formal application for this review. Applications must be filed with the Office of Registrarial Services for the Division of Engineering according to the application deadlines for each term. (See p. 10.)

Requests for review of grades in Architecture courses are dealt with by the Director of the School of Architecture. Students will be invited to submit to the Director a written statement presenting the grounds for the Review and their work from the course. This must be received in the Director's Office no later than: February 15th for the Fall term; July 15th for the Winter term; and October 15th for the Summer session. The instructor(s) who awarded the grade will present the rationale for the grade awarded. A Review of Grade Committee will be established by the Director, comprised of faculty from the School who are not directly involved with the grade under review. The Committee shall make recommendations to the Director, with respect to the grading. Changes in grade shall be at the discretion of the Director.

The Review of Grade Committee will be established after the deadline for applications has expired.

Evaluation

To gain standing in a course, a student must meet the course requirements for attendance, term work and examinations.

Instructors will inform their classes in writing before the last date for course change of the elements that will contribute to the final grade and their weighting, including attendance, class participation, essays, tests and final examinations. Also stated will be the availability of supplemental and grade-raising examinations, and the method of computing a grade revised by these examinations.

Retention of Work

Keeping a good portfolio is a most important part of architectural education. A portfolio represents a record of the student's progress and design experience over the years. It is an indispensable requirement for any job application in the future. A portfolio is started in First year and continues to expand until graduation. The School, therefore, requires that each student produce reductions (normally 8 1/2 x 11 inch reproductions, colour or black and white and/or slides) of their work at the end of each term. One copy of the work should be put in the student's portfolio and the other turned in to the instructor for retention in the School's archives. (This facilitates retrospective exhibitions of work, accreditation, publications and any future references for pedagogic purposes.) Original work is the property of the students, but the School retains the right to keep work of merit for up to two years after the date of submission. The School will make every effort to preserve the work in good condition, and will give authorship credit and take care of its proper use.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations. (See p. 52.) To meet Section 1 of the regulations, a student must have had clear standing to Fifth year and have passed an approved pattern of courses in Fifth year with grades of C- or

better in each of the Studio and Thesis courses taken and a GPA in the other courses of 3.5 or better.

Application to Graduate

Students expecting to graduate in the Spring must make application on the form available in the Divisional Registrar's Office by February 1; those expecting to graduate in the Fall by September 1; and those expecting to graduate in February, by December 1.

Degrees with Distinction

Upon recommendation of the School of Architecture, the notation "with High Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Architecture. To be considered for this recommendation, the candidate is expected to obtain a GPA of 10.0 or better in the course requirements of final year. In addition, the student must obtain a GPA of 7.8 or better in the design studio courses of the First to Fourth years inclusive, and 7.8 or better in the other course requirements of the First to Fourth years inclusive.

Upon recommendation of the School of Architecture, the notation "with Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Architecture. To be considered for this recommendation, the candidate is expected to obtain a GPA of 8.0 or better in the course requirements of final year. In addition, the student must obtain a GPA of 6.6 or better in the design studio courses of the First to Fourth years inclusive, and 6.6 or better in the other course requirements of the First to Fourth years inclusive.

For transfer students, degrees "with Distinction" and "with High Distinction" will be awarded at the discretion of the Faculty Board.

Scholarships and Awards

The faculty of the School will recommend students to the Senate for scholarships and awards available to the School. For this purpose an overall GPA including the design studio courses will be calculated. The design studio grade, the course GPA or the overall GPA will be used as is most appropriate for the nature of the award.

Special prizes are also given to acknowledge distinguished work.

Students admitted with advanced standing whose GPA may not represent a true measure of their worth will be given individual consideration.

See Awards and Financial Assistance, p. 22.

Course Requirements

Core Courses

1. Design Studios

(a) The heart of the architectural program is the

design studio. Design projects are the primary learning vehicle, supported by lectures, seminars and tutorials. The most valuable aspect of our Studio program is its emphasis on creative architectural thinking driven by convictions and issues embedded in the life experience of individuals. However, individual sensibilities must be integrated with site and environmental conditions, human factors, building technologies, the architect's professional obligations to society and the conventions of architectural practice. The essence of the design studio is the resolution of these often conflicting demands.

Design studio courses are for 1.5 credits a term in the first four years. In Fifth year, design studio or research thesis is 1.5 or 2.5 credits per term in accordance with the notes on the chart on p. 129. Design studio courses are taught by lectures, seminars and individual tutorial instruction. The design studio courses tend to require more individual work than might be indicated by the scheduled contact time. Enrolment is restricted to students admitted to the Architecture program.

Studio Critiques are indispensable, and integral to nearly all architectural programs. Critiques are the forum in which the discussion of architecture can become concrete and specific, around work actually completed. They provide an opportunity for students to explain intentions and to judge those intentions against the interpretations of invited critics, faculty, and other students.

(b) As a special option, the program normally offers Visiting Critic Studios, to provide a limited number of students in Fourth and Fifth years with an opportunity to work with a distinguished teacher or architect. The visiting critic presents the design problem and works closely with a faculty member who co-ordinates the studio. Students will normally be allowed a maximum of one term in a Visiting Critic Studio.

2. Core Courses

Core courses are the mandatory part of the program, providing the required academic and professional foundation for studies in architecture. While more extensive in the lower years, they extend across the entire program and are as designated in the course charts, p. 128 and in the description of courses offered, p. 127. Enrolment in core courses may be limited by constraints of space and other resources. When necessary, preference will be given to students registering in the Architecture program and the Architecture/Art History combined program.

Note:

Prerequisites to core courses may not be waived except on appeal to the CSPA and with special permission of the Faculty Board.

Elective Courses

1. Workshop Courses

Workshop courses are scheduled for one term at six hours a week of seminar and/or individual work, including tutoring, and receive a half credit. Workshop enrolments are limited.

2. Approved Electives

To satisfy the elective requirements in the Bachelor of Architecture program, the School will recognize any successfully completed university-level courses considered acceptable by Carleton University. The student may freely choose courses accepted for credit within the University.

Course Program

The program of study is outlined in the following charts and detailed course descriptions appear on p. 128, and listed under "Courses and Workshops." (See p. 127.)

All programs are subject to change according to the final availability of resources at the time of registration.

Student Initiated Study Abroad

Applications for Student Initiated Study Abroad programs (which include studio courses) will be considered for credit on a case by case basis by the CSPA. Students must present full, comprehensive, and detailed information, (in English) for the courses and program proposed. The deadline for applications is February 1. In order to be eligible to take design studio courses students must have completed the previous program year with clear standing and have achieved a cumulative GPA of 7.0 or better in all studio courses previously taken at Carleton. Students wishing to study abroad in their Fourth year should participate in the School's Directed Studies Abroad programs. Students who are accepted into Student Initiated Studies Abroad programs must obtain a letter of permission from the CSPA before registering at the host institution.

Directed Studies Abroad

When circumstances allow, the School will undertake a Directed Studies Abroad option for groups of 15 or more students who are enrolled in the Fall term of the Fourth or Fifth year of the program. The School may support the proposal for a Directed Studies Abroad program, but if, the participation list falls to a group of fewer than 12 students, the School will cancel the program. Notification of such program cancellation will be made as soon as possible after the decision has been taken.

This study takes place in a location away from Ottawa and usually outside Canada. The location is selected for its architectural and urban relevance, and is carried out under the direction of a faculty member of the School.

The Directed Studies Abroad option is available to students with clear standing to the Fourth or Fifth year of the program and have the permission of the School. Priority will be given to Fourth year students. Academic standing will be determined on the basis of the grades achieved by the end of the examination period of the Winter term of third or fourth year. Participation lists, including wait lists, for all Directed Study Abroad programs will be determined according

to the standing students have achieved at that date, irrespective of the work students may choose to undertake over the Summer session, or through grade-raising or supplemental exams. Those who achieve clear standing after the Winter term deadline, will be accommodated where space is available with the permission of the School.

Fifth-Year

Students will not be permitted to register in Fifth-year core courses if they are carrying a deficiency of more than 1.0 elective credits from a previous year. Deficiencies in core courses will not be permitted.

Before the end of the Fourth year of the program, students will enter into discussions with faculty members regarding their Fifth-year courses. Approval of self-initiated work and thesis proposals, does not waive the academic standing requirements of the program for proceeding to Fifth year.

Independent Study

A student enrolled in the Bachelor of Architecture program may propose, and may be permitted to undertake an independent study in lieu of approved elective or workshop elective course for one-half credit in each of Third, Fourth and Fifth years.

The purpose of this provision is to allow more flexibility for students to pursue a line of investigation in their own way, free of normal constraints of timetable and University locale. The independent study at the undergraduate level is to make no demands on University faculty other than those required for approval and evaluation.

In certain cases, with the approval of the department in which they are registered, students enrolled in another program at the University may be permitted to enrol in an independent study course under the direction of a member of the faculty of the School. The procedures and conditions will be detailed and approved jointly by the student, the department and the assessor in the school.

Serious scholarship and research are expected and proper documentation will be required. In the case of students in Architecture, registration for the study will be subject to the following conditions:

1. The student must not be on probation and must have no deficiencies in core courses from an earlier year.
2. The student will register for an independent study course in the term or session during which the work is to be completed. The student must submit the proposal in writing to the assessor prior to registration, outlining the objectives and direction of the study, the time and locale, resources available, submission date and other pertinent information.
3. The student must have obtained the prior agreement of a member of the teaching staff to act as assessor for the study. The student must also obtain the Director's approval of the proposal prior to registering in the course. The staff member will be responsible for evaluation. The student's assessor will deliver the completed and approved proposal to the Records Office of the School of Architecture to be filed with the student's course records.

General Information

Materials, Supplies and Field Trips

The program in Architecture, particularly the design studio courses, requires that the student produce large quantities of drawings and models, as well as ozalid prints and photostats, and requires use of other photographic media, reproductions of drawings, reports, etc., all of which can be costly.

Equipment for drawing, photography, etc., should be regarded as an investment, because good tools are essential and last a long time if properly cared for. An equipment list is provided as a guide to the entering student. A good quality 35mm. camera is a very useful but not mandatory item on the list and most students find they use it to such an extent that they wish to purchase one during the first year or two of the program.

Field trips to other cities are a part of the program. The School usually absorbs part of the cost of transportation but students are expected to meet most other expenses while away.

Experience indicates that the student should budget about \$1,500 for materials, equipment and field trips per year, not including a camera.

Architecture 128

First Year	Fall Term	Winter Term	
76.106★	Ancient Architecture	76.110★	Medieval Renaissance and Baroque
77.101★	Introduction to Technology and Architecture	77.105★	Architectural Thought and Contemporary Society
76.109★	Graphic Literacy	79.111★	Computer Craft
80.111	Design Studio 1A	80.112	Design Studio 1B

Notes:

1. Architecture 80.111 and 80.112 each have a course value of 1.5 credits.

2. 76.106★ now replaces 76.120★.
76.110★ now replaces 76.121★
77.101★ now replaces 77.113★

Second Year	Fall Term	Winter Term	
76.220★	Neoclassical Architecture and Nineteenth Century Architecture	76.221★	Twentieth Century Architecture
77.206★	Lighting/Acoustics in Architecture	77.231★	Architectural Detailing for Construction
76.203★	Fundamentals of Architectural Vocabulary	77.213★	Structural Analysis in Architecture
80.211	Design Studio 2A	80.212	Design Studio 2B

Notes:

1. Architecture 80.211 and 80.212 each have a course value of 1.5 credits.

2. 77.206★ now replaces 77.205★. 77.231★ now replaces 77.230★.

Third Year	Fall Term	Winter Term	
76.310★ 77.313★ 1	Physical Morphology of the City Structural Design in Architecture Workshop★	77.306★ 1 1	Mechanical and Electrical Services Elective★ Workshop★ or Elective★
80.304	Design Studio 3A	80.306	Design Studio 3B

Notes:

1. Architecture 80.304 and 80.306 each have a course value of 1.5 credits.

2. 77.306★ now replaces 77.305★ (no longer offered).

Fourth Year	Fall Term	Winter Term
2 Electives (1.0 credit total)		76.452★ Architectural Research and Criticism
1 Workshop Elective★		1 Elective★
		1 Workshop Elective★
80.403	Design Studio 4A	80.405 Design Studio 4B

Notes:

1. Architecture 80.403 and 80.405 each have a course value of 1.5 credits.

Fifth Year	Fall Term	Winter Term
77.350★	Design Economics	78.320★ Professional Practice
One of:		One of:
80.440	Studio 5A and 1.0 credit Elective or 0.5 credit Elective and 0.5 credit Elective Workshop	80.458 Studio 5B: Student Initiated Projects
80.460	Research Thesis 1	80.461 Research Thesis 2
80.466	Design Thesis 1	80.467 Design Thesis 2
80.470	Selected Topics Studio	

Notes:

1. Architecture 80.440 has a course value of 1.5 credits

Architecture 80.458, 80.460, 80.461, 80.466, 80.467, 80.470 each have a course value of 2.5 credits.

2. Students who have already taken Architecture 77.350 will take an approved elective as a substitute.

Courses and Workshops

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Architecture 76.105★ Core Course

Architectural Thought and Contemporary Society

Through the medium of lectures and seminars, the relationship between architecture, architectural thought and the architectural profession to the society in which they exist (and which they must serve) are examined. The topics considered in any year are selected to emphasize key issues.

Lectures and seminars, three hours a week.

Architecture 76.106★ Core Course

Ancient Architecture

Architecture of primary world civilizations prior to the medieval period in the western tradition and including the medieval period in non-western traditions. The role played by architecture in the evolution of culture. The sources of architectural ideas and their relation to cultural and technical contexts. Areas covered include Europe, Asia, and the New World. Emphasis is on interpretation of architectural form in relation to

intentions and on parallels between contemporary architectural design and the ancient art of architecture.

Precludes additional credit for Architecture 76.120★ (no longer offered).

Lectures three hours a week.

Architecture 76.110★ Core Course

Medieval, Renaissance and Baroque Architecture

The transformation of architectural imagination within the West from the fall of Rome to the rise of the modern world. Emphasis is on the continuities that run through the periods covered. The relationship between architecture and worldview provides thematic consistency against which specific developments can be observed and measured. Treatment of this period provides a critical background for study of modern architecture.

Precludes additional credit for Art History 11.120★ and Architecture 76.120★ (no longer offered).

Lectures three hours a week.

Architecture 76.203★ Core Course

The Fundamentals of Architectural Vocabulary

An exploration of architecture as the embodiment of ideas, language and meaning. Ideas are considered in relation to broad conceptual frameworks contrasting various theoretical approaches. Language is examined in terms of the elements, relationships, and

ordering ideas within architecture. Consideration of the process of experiencing architecture and the levels of meaning in architecture complete the content undertaken in this course.
Lectures three hours a week.

Architecture 76.206★ Elective Course
Introduction to Industrial Design

Offered in the School of Industrial Design as Industrial Design 85.100★.

Architecture 76.211★ Elective Course
Industrial Design Analysis

Offered in the School of Industrial Design as Industrial Design 85.101★.

Prerequisite: Architecture 76.206★.

Architecture 76.212★ Elective Course
Visual Design

An analytical study of design principles including arrangement, composition, form, order, rhythm, colour and texture.

Lectures three hours a week.

Architecture 76.220★ Core Course
NeoClassical and Nineteenth Century Architecture

A study of Eighteenth and Nineteenth Century architecture in Western Europe. The course emphasizes the cultural and philosophical framework of rising modernity to illuminate architectural production and theory. Theoretical and epistemological discourse is considered in relation to contemporary architectural developments with particular emphasis on classicism, the emergence of rationalist ideology in design, and the demands of new building types, new urban conditions and new technical possibilities.

Precludes additional credit for Art History 11.121★ and Architecture 76.121★ (no longer offered).

Prerequisites: Architecture 76.106★ and 76.110★ or permission of the School.

Lectures three hours a week.

Architecture 76.221★ Core Course
Twentieth Century Architecture

The evolution of Modern architecture, concentrating on the various Modern Movements in Europe in the first half of the 20th Century, and parallel developments in North America. The course will use references to literature, the visual arts and the history of film to set a cultural context for the complex development of competing 'isms which precipitated the main stream International Style in mid-century. More recent buildings will be studied to illustrate tendencies and correspondences with the Heroic era of modern design.

Precludes additional credit for Architecture 76.121★ (no longer offered).

Prerequisite: Architecture 76.220★ or permission of the School.

Lectures three hours a week.

Architecture 76.302★ Elective
History of Canadian Architecture

Canadian architecture from the seventeenth century to the present day, covering both stylistic and technological development with an emphasis on the latter. Building styles, methods and materials are considered in the context of the social and economic conditions of the time with a concentration on the

analysis of the architectural elements of design and construction methods. (Also listed as Art History 11.302★.)

Prerequisites: Architecture 76.106★ and 76.110★ or equivalents or permission of the School.

Lectures, seminars three hours a week.

Architecture 76.307★ Elective
History of Architectural Theory

An exploration of architectural intentions in the early period of Western history, with special emphasis on Renaissance treatises and ideas. Architectural intentions are examined in relation to shifting world-views, forming the basis of historical interpretation.

Lectures three hours a week.

Architecture 76.308★ Elective
Origins of Modern Architecture

An exploration of architectural theories with special emphasis on the European context from the seventeenth century to the late nineteenth century. This crucial period marks the beginning of the modern era and provides a key for a fuller understanding of the problems facing architecture today.

Lectures three hours a week.

Architecture 76.309★ Elective
History and Theory of the Avant-Garde

An exploration of architectural theories with special emphasis on the development of the Avant-Garde in the early twentieth century. The course develops a specific understanding of the Avant-Garde within the larger framework of modernism.

Lectures three hours a week.

Architecture 76.310★ Core Course
The Physical Morphology of the City

A historical and theoretical description and comparative analysis of the physical morphology of cities. The primary structural, spatial and formal organization and elements that characterize the morphology of cities are studied in terms of their historical and contemporary significance for architecture and urban design.

Precludes additional credit for Architecture 76.204★ (no longer offered).

Prerequisite: Architecture 76.106★, 76.110★ (11.120★), 76.220★ (11.121★) or equivalents, or permission of the School.

Lectures three hours a week.

Architecture 76.315★ Elective
Theories of Landscape Design

An introductory course intended to bring to the student an awareness of landscape architecture as the total organization of outdoor space. A consideration of historical, cultural, economic and political factors provides a frame for reference for the understanding of spatial organization in both urban and rural areas of human settlement. Emphasis is given to the development of landscape design in the fifteenth to the nineteenth centuries.

Lectures three hours a week.

Architecture 76.318★ Elective
Design of Cities

A study of the architecture of the city. This course examines the form, meaning and qualitative experience of urban composition. Significant artifacts in the development of Western European civilization are

analyzed and used as a basis for exploring the shape and values of North American cities. See also related workshop, Architecture 76.328★.

Prerequisite: Architecture 76.310★ or permission of the School.

Lectures three hours a week.

Architecture 76.319★ Elective

Theory of City Form

This course examines current design attitudes affecting the physical morphology of cities. These attitudes are studied from the standpoint of the relationship between practical and functional aspects on the one hand, and man's symbolic and psychic perceptions on the other.

Prerequisite: Architecture 76.310★ or permission of the School.

Lectures three hours a week.

Architecture 76.328★ Elective Course

The Architecture of Urban Space

This workshop undertakes design explorations that are directed towards the search for aesthetic form and meaning in urban space, with particular application to the Canadian context. It is project-oriented and refers to precedents as established in Architecture 76.204★.

Prerequisite: Architecture 76.310★ or permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 76.391★ Elective

Selected Topics: Studies in Theory and History of Architecture

The course focuses on one specific aspect of architecture in the area of theory and history. Course offerings change from year to year.

Prerequisite: Permission of the School.

Architecture 76.392★ Elective Course

Selected Topics: Workshops in Theory and History of Architecture

Workshop focuses on one specific aspect of architecture in the area of theory and history. Workshop offerings change from year to year.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 76.408★ Elective

Foundations of Modernism in Architecture

This course examines major critical perspectives as they are applied to architecture as a fine art. The debate between classicism and romanticism with consideration of its cultural roots establishes the basis of the course.

Lectures three hours a week.

Architecture 76.423★ Elective Course

Society and Shelter

An examination of buildings and shelter as human and social products. Major areas of concern include the impact of built form on social behaviour and thought; the perception of the built environment and the design and construction of buildings as social processes. (Also listed as Sociology 53.339★.)

Lectures three hours, seminars three hours a week.

Architecture 76.424★ Elective Course

Studies in the Design Professions

A critical and comparative analysis of the design

professions. Emphasis will be on the professions of architecture and industrial design - although engineering design, interior design and planning will be discussed as well. Comparisons will be made to the traditional professions, as well as to other occupations involved in art and design. Topics to be discussed will include the role of these professions in the development of culture and society; problems of education, career and work; the structure of knowledge in the design professions; and the nature of design practice. (also listed as Sociology 53.424★). Prerequisites: For Architecture 76.424★: Third-year standing in the B.Arch. program or Fourth-year standing in Sociology or the School for Studies in Art and Culture (in the Combined Architecture/Art History program); or permission of the School of Architecture. For Sociology 53.424★: Fourth-year standing in Sociology or permission of the Department. Seminar three hours a week.

Architecture 76.425★ Elective Course

Workshop: User Analysis and Building Performance

Seminars, individual and team projects to develop skills in the analysis of building performance. Examination of occupancy analysis, safety and risk assessment, post-occupancy evaluation, and social impact assessment.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 76.440★ Elective

Directed Studies Abroad: Theory

A survey of the architectural and urban history of a specific culture. These discussions address the present reality of a country, region or city being visited by the Fourth year of the program.

Prerequisite: Clear standing to Fourth year and permission of the School.

Lectures three hours a week.

Architecture 76.452★ Core Course

Architectural Research and Criticism

This course is intended to prepare the student for the independent research and design work to be undertaken in the Fifth year. It includes work related to the nature of research and criticism in architecture, and to their application to the particular tasks of Fifth year. Debate and discussion of major issues pertaining to architecture is encouraged. The students are expected to develop their critical skills, and to identify their personal positions on architectural issues.

Lectures and seminars four and one-half hours a week.

Architecture 76.455★ Elective Course

Seminar in Theory and History Elective Course

An upper-level seminar course covering topics related to history and theory of architecture. The intention of this course is to facilitate in-depth discussion of subject matter through intensive class participation and presentations made possible by a limited-enrolment format. Topics will vary depending on the instructor who is teaching the course.

Maximum enrolment of 15 students in Architecture. B.Arch. students must be Fourth or Fifth year students, others by permission of the Instructor.

Three hours a week.

Architecture 76.488★ Elective Course
Independent Study

Architecture 77.101★ Core Course
Introduction to Technology and Architecture
Introduction to technology as an integral part of architecture essential to its modes of inquiry, thought and making. The physical world, both natural and man-made, and human metabolism and senses as basis for making architectural decisions regarding the form, structure, construction and operation of buildings. The course forms an overview to the full spectrum of technological concerns stressing the interrelatedness of building structure, construction and services to architectural decision-making.
Precludes additional credit for Architecture 77.113★ (no longer offered).
Lectures three hours a week.

Architecture 77.131★ Core Course
Construction Methods and Materials
A study of the relation between the nature and behaviour of materials and the skills, tools and processes by which common building materials are transformed into building components, subassemblies and whole buildings. Materials covered range from traditional and natural to the most recent developments including use of synthetics and composites. Methods explored range from craft to industrialized and from on-site to off-site production and assembly. Emphasis is on the fundamental reasoning behind the selection of relevant sub-systems and techniques in order to maintain quality of construction and the design intent.
Precludes additional credit for Architecture 77.130★ (no longer offered).
Prerequisite: Architecture 77.101★.
Lectures three hours a week.

Architecture 77.135★ Elective Course
The Nature and Behaviour of Materials
An introduction to the fundamentals of all materials, natural and man-made, and an analysis of their basic organizational patterns and form; an investigation of materials science including cohesion, elasticity, strain energy, work of fracture, crack stopping and the general theory of strength; a comparative survey of the metallic and non-metallic traditions of man, culminating in an exploration of plastics, composites and the materials of the future.
Text: Gordon, *The New Science of Strong Materials*.
Lectures three hours a week.

Architecture 77.201★ Elective Course
Structures in Architecture
A survey to structural planning, including a historical survey of structural systems, details and the study of the factors involved in the synthesis of a suitable structural scheme. The course is intended as a survey of the science and the structural properties of materials.
Precludes additional credit for Architecture 77.113★ (no longer offered).
Prerequisite: Architecture 77.101★ or permission of the School.
Lectures three hours a week, laboratory two hours a week.

Architecture 77.206★ Core Course
Lighting/Acoustics in Architecture
An introduction to natural (daylighting) and artificial light, its sources and behaviour, visual perception and the human eye. Light will be studied as a form-giver in architecture, augmented by sun charts and guidelines for daylight design for different tasks. The second part of the course introduces the student to sound and the control of the sonic environment: the nature of sound, the human ear and physiological and psychological acoustics through the study of sound radiation, propagation, absorption and reflection in open-air spaces vs. enclosed spaces, and noise control in building structures.
Precludes additional credit for Architecture 77.205★ (no longer offered).
Prerequisite: Architecture 77.131★ or permission of the School.
Lectures three hours a week, laboratory three hours a week.

Architecture 77.213★ Core Course
Structural Analysis in Architecture
Statics and strength of materials. Mechanical properties of structural materials. Application of statics and strength of materials to problems of structural elements in the context of total building structures.
Lectures three hours a week, laboratory two hours a week.

Architecture 77.231★ Core Course
Architectural Detailing for Construction
A study of architectural detailing as it relates to the broader discipline of architectural design and construction in the context of environmental forces and cultural factors of the everyday environment. The course will emphasize the Canadian and northern situation as it covers the topics of building enclosures, foundations, walls, windows and roofs as well as interior details for various construction methods, materials and building types. The course stresses a knowledge of details and the assembly of parts as an essential component of architectural design.
Precludes additional credit for Architecture 77.230★ (no longer offered).
Prerequisite: Architecture 77.131★ or permission of the School.
Lectures three hours a week.

Architecture 77.300★ Elective Course
Lighting for Architecture
Natural and electric lighting as part of the visual and perceptual processes of revealing two- and three-dimensional objects and spaces. Measurement of light, units and engineering standards. Basic calculations and design methods including the use of models. Characteristics of light sources for economy and colour rendering. Discomfort and disability. Concepts of visual performance.
Lectures three hours a week.

Architecture 77.302★ Elective Course
Acoustics in Architecture
Recapitulation of fundamentals. Sound in enclosures, including interior design of auditoria and special applications. Sound reproduction and reinforcement systems. Acoustic privacy and protection, sound control in buildings, materials for noise control, community noise, industrial noise. Acoustic

measurements and instrumentation.
Lectures two hours, laboratory two hours a week.

Architecture 77.303★ Elective Course
Energy and Form

The purpose of the course is to provide the student with a body of knowledge concerning energy as a criterion in decision-making for architectural design. Specifically, the course covers conventional energy resources and the state of the art of alternative energy resource systems with respect to building shape, size, materials, openings, orientation, siting and use. Lectures three hours a week.

Architecture 77.304★ Elective Course
Workshop: Energy and Form

Study of the relationship between environmental factors, energy and architectural form. Emphasis is placed on explorations into ways in which buildings and building elements can be planned and designed so as to take advantage of natural cycles in order to minimize the need for supportive energy inputs. Prerequisite: Architecture 77.303★ or permission of the School. Six hours a week (lecture, seminar, lab or field work).

Architecture 77.306★ Core Course
Mechanical and Electrical Services in Buildings

Beginning with a review of building physics, human comfort and psychrometrics, the course deals with the full range of servicing systems and their interaction with the building. Areas covered include heating, ventilating, air-conditioning as well as plumbing, electrical systems, fire safety, vertical transport and integrated systems with a view to energy conservation, recycling and use of solar assisted systems for space heating/cooling and water pre-heating. Also covered are site services.

Precludes additional credit for Architecture 77.305★ (no longer offered).

Prerequisite: Architecture 77.206★ or permission of the School.

Lectures three hours a week, laboratory three hours a week.

Architecture 77.313★ Core Course
Structural Design in Architecture

Behaviour of structural elements and simple systems under load conditions of increasing severity. Simplified design of structural elements and systems. Comparative estimation of stresses and deformations. Use of structural testing laboratory to demonstrate behaviour path to failure.

Prerequisites: Architecture 77.101★ and 77.213★

Lectures three hours a week, laboratory two hours a week.

Architecture 77.314★ Elective Course
Structural Analysis II

Offered in the Department of Civil and Environmental Engineering as Engineering 82.420★.

Architecture 77.316★ Elective Course
Design of Structural Steel Components

Offered in the Department of Civil and Environmental Engineering as Engineering 82.325★/82.425★.

Architecture 77.326★ Elective Course
Workshop: Space Enclosure Systems

The exploration of space enclosure systems for a

wide range of environments.

Prerequisite: Architecture 79.320★ or permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 77.330★ Elective Course
Performance of Building Materials

Study of materials available for building, with emphasis on their structure, properties, application and sustained performance over the life of a building.

Laboratories, lectures, field trips four hours a week.

Architecture 77.335★ Elective Course
Workshop: Materials Application

Application of building materials, including the forming of building parts and the design of joints for performance and assembly. Practical constructions using new technology are emphasized.

Prerequisite: Architecture 77.330★ or permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 77.350★ Core Course
Design Economics

Principles of building economics. Determinants of building costs and their prediction. Discussions on uncertainty and investment economics. Systems and techniques of creative cost control for buildings during schematic design, design development, construction document preparation and construction. Prime emphasis is on the economic evaluation and choice from among alternatives during all phases of design process.

Prerequisite: Fifth-year standing or permission of the School.

Three hours a week.

Architecture 77.391★ Elective Course
Selected Topics: Studies in Architectural Technology

The course focuses on one specific aspect of architecture in the area of architectural technology. Course offerings change from year to year.

Prerequisite: Permission of the School.

Architecture 77.392★ Elective Course
Selected Topics: Workshop in Architectural Technology

Workshop focuses on one specific aspect of architecture in the area of architectural technology. Workshop offerings change from year to year.

Prerequisite: Permission of the School.

Six hours a week (lecture, lab, seminar or field work).

Architecture 77.401★ Elective Course
Integration of Building Systems

As the last course in the "Technology and Architecture" series, it examines the creation of architecture as a multi-disciplinary endeavour with particular emphasis placed on design and the architect's role and responsibility on the team. The course is modelled on the Case Study method (design development to working drawings and construction), tracing the inter-relationship of decisions made with respect to building form, support, enclosure, services, interior finishes, etc. Emphasis is placed on contemporary concerns and means in architecture.

Prerequisite: Architecture 77.206★ and 77.231★ or permission of the School.

Lectures one-and-a-half hours a week, laboratory three hours a week.

Architecture 77.420★ Elective Course

Structural Morphology

Concepts and models bridging geometric morphology and architecture. Hierarchies of dimensional spaces. Planar and spatial orders. Form aggregation and space subdivision within the laws of geometric compatibility and formal rigidity. Size, similitude and isomorphism.

Lectures three hours a week.

Architecture 77.424★ Elective Course

Structural Planning in Architecture

Offered in the Department of Civil and Environmental Engineering as Engineering 82.442★.

Precludes additional credit for Engineering 82.430★ (no longer offered).

Architecture 77.428★ Elective Course

Workshop: Structure and Form

Study of structural nature of non-conventional space enclosure systems like cable structures, membranes, shells, submerged structures, excavated structural forms and lunar structures.

Prerequisite: Architecture 77.420★ or permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 77.440★ Elective Course

Design for Construction

Conceptual and detail design in relation to materials and building construction. The effects on building design of building codes, zoning bylaws, approvals, processes and legislation, and the basic organization of the building industry. An overview of principles of cost estimating and cost control and the implications for building design decisions.

Prerequisite: Architecture 77.330★ or permission of the School.

Visits, lectures, seminars three hours a week.

Architecture 77.488★ Elective Course

Independent Study

Architecture 78.320★ Core Course

Introduction to Professional Practice

An overview of the practice of architecture. Topics include professional organization and conduct, the architect's services, business law, office organization and management, contract documents, building codes, contract management, cost control, accounting and site supervision. Presentation through lectures, guest speakers and case studies from professional practices and construction representatives in the area.

Prerequisite: Fifth-year standing or permission of the School.

Lectures three hours a week.

Architecture 78.323★ Elective Course

Workshop: Landscape Architecture

The objective of this course is to introduce the student to the practical significance of landscape elements as they relate to built-form by integrating structure and site.

Prerequisite: Architecture 76.315★ or permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 78.340★ Elective Course

City Organization and Planning Processes

An overview of the structure, form and functioning of Canadian and other countries' cities; methods for intervening in and directing processes and solving city problems: an introduction to urban problems, potentials and solutions. Topics include: physical infra-structure and forms of cities; urban facilities and networks; ecosystems, demography and social organization, and government and politics; quality of life, goals and perceptions of urbanites; urban management, development, regulation and codes, design, planning and policy-making. Lectures, guest lecturers, reading assignments.

Three hours a week.

Architecture 78.345★ Elective Course

Workshop: Urban Design

A project-based workshop investigating current design attitudes and solutions affecting the physical morphology of cities. Students undertake formally sophisticated urban design projects, explore various procedures and discuss basic urban design ideas.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 78.349★ Elective Course

Workshop: City Organization and Planning Processes

Interdisciplinary investigation, analysis and synthesis of the institutions, processes, environments and demography of Canadian cities. Seminars, guest lecturers, field investigations and individual and team projects.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 78.350★ Elective Course

The Development of Human Shelter

Emphasis is on the background factors pertaining to housing in both industrial and Third-World countries; traditional and contemporary housing approaches; social housing and people's right to adequate housing. Overviews, case studies and guest lecturers.

Three hours a week.

Architecture 78.391★ Elective Course

Selected Topics: Urban Studies

The course focuses on one specific aspect of architecture in the area of urban studies. Course offerings change from year to year.

Prerequisite: Permission of the School.

Architecture 78.392★ Elective Course

Selected Topics: Workshop in Urban Studies

Workshop focuses on one specific aspect of architecture in the area of urban studies. Workshop offerings change from year to year.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 78.488★ Elective Course

Independent Study

Architecture 79.109★ Core Course

Graphic Literacy

By means of lectures, demonstrations, and assignments the fundamental disciplines of freehand drawing, photography and life drawing are cultivated. This course is intended to enhance, support, and complement the development of graphic skills and techniques in Design Studios. Normally this course will be taught by a number of different instructors.

Prerequisite: Registration in the B.Arch. program.
Three hours a week.

Architecture 79.111★ Core Course

Computer Craft

This course is an introduction to architectural computing as a design, presentation and documentation medium; it emphasizes principles and techniques of application rather than details of the underlying technology. It is organized around extensive practical work using the PASCAL programming language and a large-scale library of graphics routines, GKS, as well as the use of selective applications programs on the Apple Macintosh computer (i.e. PhotoShop, Illustrator, Freehand, MiniCad, MacDraw II, etc.). The first half of the course is devoted to learning a programming language (Pascal/GKS) with the second half devoted to learning to use applications programs on the Mac. No previous computer background is assumed. Pascal is introduced step by step, as the course progresses.

Prerequisite: Registration in the Architecture degree program.

Lectures three hours a week, laboratory one hour a week.

Architecture 79.115★ Elective Course

Mathematics in Architecture

Mathematics as a way of thinking and an abstract process as this relates to architecture; a survey of the mathematics applicable to architectural technology and other courses in the program, including Euclidian, non-Euclidian and analytic geometries, probability and statistics. The course is developed as an exploration of mathematics as a discipline that can clarify many aspects of design and support a student's overall education.

Lectures three hours a week.

Architecture 79.303★ Elective Course

Workshop: Theatre Production

A workshop course involving students in the design and fabrication of theatre productions, one of which is staged on campus. Visiting directors, designers, technical consultants and others are invited to discuss their approach to theatre production and to offer advice and criticism on student projects. There are visits to theatres and production facilities.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 79.312★ Elective Course

Problems in Computing

Introduction to various types of non-numeric data, their representation within primary and secondary storage, and the manipulation of various representations. Comparative evaluation of languages for non-numeric problems. Student projects.

Prerequisite: Permission of the School.

Lectures two hours a week, laboratory two hours a week.

Architecture 79.320★ Elective Course

The Geometry of Form

The development of a basic vocabulary of form through identification of the rules for combining and relating the minimal identifiable elements of geometric form. Investigation of the methodologies for changing those identities in order to generate entirely new forms. Study of planar and space geometries with special emphasis on polygons and polyhedra, their singular, close and loose-packing properties. Discussions on form; geometric operations, like vertex motion, folding, reciprocation and truncation.

Text: Williams, *Natural Structure*.

Lectures three hours a week.

Architecture 79.326★ Elective Course

Workshop: Computer Applications

Applications of existing computer programs and programming techniques to various architectural problems. Software, state of the art and applications are extensively covered. Project work may be user-orientated on the basis of existing software or development of original work. Student projects.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 79.328★ Elective Course

Workshop: Computer Graphics

Use of interactive graphics hardware systems and study of file structures for graphics processing. Developmental work leading toward computer-generated art as well as implementation of production-oriented user display software is encouraged. Student projects.

Prerequisite: Architecture 79.312★ or permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 79.330★ Elective Course

Workshop: Co-operative Problem Solving

Group training in the creative exchange and development of ideas; group problem-solving sessions focus on participation and roles, listening, itemized response, use of metaphor and analogy, forcefit, closure; follow-through techniques; visual brainstorming and generative graphics. Student project. Limited enrolment.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 79.332★ Elective Course

Workshop: The Anatomy of Architecture

An exploratory workshop into the architectural anatomy of selected contemporary buildings. Use of graphic techniques of analysis to develop an understanding of their basic compositional principles and language.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 79.333★ Elective Course

Workshop: Architecture as Painting

The purpose of this course is to analyze architecture for its elemental, formal and narrative properties. These relationships are then "re-represented" through the medium of painting. Architecture as analogy to painting.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 79.340★ Elective Course

Workshop: Visual Design

A workshop program to increase the student's capacity to visualize and communicate in several graphic media, and also to increase sensitivity to form, structure, space, texture and colour. Historical investigations may be involved.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 79.341★ Elective Course

Workshop: Photography

Experimentation with photography as a means of visual research and communication of the social and built aspects of the environment. Familiarity with the basic techniques of photography is required as a prerequisite. Students are required to prepare a photographic essay that explores some aspect of the relationship between people and the built environment.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 79.391★ Elective Course

Selected Topics: Studies in Architectural Techniques

The course focuses on one specific aspect of architecture in the area of architectural techniques. Course offerings change from year to year.

Prerequisite: Permission of the School.

Architecture 79.392★ Elective Course

Selected Topics: Workshop in Architectural Techniques

Workshop focuses on one specific aspect of architecture in the area of architectural techniques. Workshop offerings change from year to year.

Prerequisite: Permission of the School.

Six hours a week (lecture, seminar, lab or field work).

Architecture 79.488★ Elective Course

Independent Study

Design Studios/Design Thesis/Research Thesis

Architecture 80.111 Core Course

Design Studio 1A (1.5 credits)

An introductory studio directed toward the development of basic design skills. Projects include: abstract two-dimensional and three-dimensional exercises. The studio also has assignments in photography, colour theory, life drawing and perspective.

Prerequisite: Registration in the Architecture degree program.

Scheduled studio time 12 hours a week.

Architecture 80.112 Core Course

Design Studio 1B (1.5 credits)

A continuation of Architecture 80.111. Ordering principles that form a basis for architecture are investigated at an elemental level. Design projects are semi-abstract and highly constrained. The studio also includes assignments in photography, colour theory, life drawing and perspective.

Prerequisite: Registration in the Architecture degree program.

Scheduled studio time 12 hours a week.

Architecture 80.211 Core Course

Design Studio 2A (1.5 credits)

The application of ordering principles in architecture is considered in response to site, climate, function and materials and methods of construction. Small-scale projects develop in complexity through both terms.

Prerequisites: Architecture 80.111 and 80.112.

Scheduled studio time 12 hours a week.

Architecture 80.212 Core Course

Design Studio 2B (1.5 credits)

A continuation of Architecture 80.211. Small-scale projects develop in complexity during this term.

Prerequisites: Architecture 80.111 and 80.112 and have taken 80.211.

Scheduled studio time 12 hours a week.

Architecture 80.304 Core Course

Design Studio 3A (1.5 credits)

The principles, vocabularies and craft of architecture are considered within the contexts of purpose, place and precedent. Projects address the subject of small-scale building in the natural and urban landscape.

Prerequisites: Architecture 80.211 and 80.212.

Scheduled studio time 12 hours a week.

Architecture 80.306 Core Course

Design Studio 3B (1.5 credits)

The continuation of the theme of Architecture 80.304 with an increase in project scope and complexity.

Prerequisites: Architecture 80.211 and 80.212 and have taken 80.304.

Scheduled studio time 12 hours a week.

Architecture 80.403 Core Course

Design Studio 4A (1.5 credits)

The principles and vocabularies arising from the relationship between architecture and the urban context in which it is situated. Projects focus on part of the urban context.

Prerequisites: Architecture 80.304 and 80.306.

Scheduled studio time 12 hours a week.

Architecture 80.405 Core Course

Design Studio 4B (1.5 credits)

The principles and vocabulary of construction and technique are considered as primary generators of architectural form. Projects are based on the design development of both small-and large-scale projects.

Prerequisites: Architecture 80.304, 80.306 and have taken 80.403.

Scheduled studio time 12 hours a week.

Architecture 80.440 Core Course

Design Studio 5A (1.5 credits)

Design projects of a complexity and theoretical rigour, appropriate to Fifth year, set by faculty. Visiting Critic Studios may be taken as part of this studio.

Prerequisite: Fifth-year standing.

Scheduled studio time 12 hours a week.

Architecture 80.458 Core Course

Design Studio 5B (2.5 credits)

Student-initiated design project. Students propose a design idea or issue to be developed in depth. With the advice and approval of the studio faculty, the student defines and undertakes a suitable building project.

Prerequisite: Fifth-year standing and approved thesis proposal.

Scheduled studio time 20 hours a week.

Architecture 80.460 Core Course

Research Thesis 5.1 (2.5 credits)

Provides an opportunity for scholarly research in topics related to architecture. The thesis proposal, developed by the student and prospective tutor, requires approval by the Thesis Committee. The final submission must be within a prescribed format similar to graduate theses in humanities, social sciences, arts and engineering.

Prerequisites: Fifth-year standing and approved thesis proposal.

Architecture 80.461 Core Course

Research Thesis 5.2 (2.5 credits)

As Architecture 80.460 (Research Thesis 5.1). In exceptional cases the Thesis Committee may allow this to be a continuation of Architecture 80.460.

Prerequisites: Fifth-year standing and approved thesis proposal.

Architecture 80.466 Core Course

Design Thesis 5.1 (2.5 credits)

Provides opportunity for in-depth exploration of an architectural idea or issue through media associated with the art of design. The thesis proposal, developed by the student and prospective tutor, requires approval by the Thesis Committee. The final submission must be in a publishable format, which could include, for example, drawings, models and/or audio-visual productions.

Prerequisites: Fifth-year standing and approved thesis proposal.

Architecture 80.467 Core Course

Design Thesis 5.2 (2.5 credits)

As Architecture 80.466 (Design Thesis 5.1). In exceptional cases the Thesis Committee may allow this to be a continuation of Architecture 80.466.

Prerequisites: Fifth-year standing and approved thesis proposal.

Architecture 80.470 Core Course

Selected Topics Studio (2.5 credits)

This studio is a vehicle for in-depth exploration of an architectural idea or issue that has originated from the research interests of a faculty member. It will run as a design-research studio-seminar with special inputs and visiting critics. There will be a directed studies component, given by the professor leading this studio, in one of the six areas of study defined under the School of Architecture in the Graduate Calendar. The primary aim of this component will be to reinforce the explorations in the studio.

Prerequisites: Fifth-year standing and permission of the School.

School For Studies in Art and Culture: Art History, Film Studies, Music

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(Arts)

423 St. Patrick's Building
Telephone: 520-3993

Academic Administration

Director

John Shepherd

Assistant Director, Art History

Roger Mesley

Assistant Director, Film Studies

Zuzana Pick

Assistant Director, Music

Jennifer Giles

Teaching Staff

Professor Emeritus

George Swinton (Art History)

Professors

C. Brown (Art History)

P. Cardy (Music)

C.G. Faulkner (Film Studies)

D. Gardner (Music)

B. Gillingham (Music)

A. Gillmor (Music)

P. Harcourt (Film Studies)

E. Keillor (Music)

R. Phillips (Art History)

Z. Pick (Film Studies)

J. Shepherd (Music)

Associate Professors

K. Crossman (Art History)

G. Finn (Cultural Studies)

M. Jackson (Art History)

M. Langer (Film Studies)

D. le Berrurier (Art History)

N. Luckyj (Art History)

P. MacFadden (Film Studies)

G. McKnight (Film Studies)

R. Mesley (Art History)

D. Piper (Music)

J. Thompson (Art History)

Assistant Professors

A. Carr (Art History)

C. O'Brien (Film Studies)

Instructor

J. Giles (Music)

Adjunct Professors

Blaine Allen, *Queen's University (Film Studies)*

Peter Baxter, *Queen's University (Film Studies)*

Michael Bell, *Carleton University Art Gallery (Art History)*

Rosemarie Bergmann (Art History)

Ted Brasser (Art History)

Clifford Brown (Art History)

Christina Cameron, *Canadian Parks Service (Art History)*

Stephen Inglis, *Canadian Museum of Civilization (Art History)*

Helmut Kallmann, *National Library of Canada (Music)*

Lily Koltun, *National Archives of Canada (Art History)*

Andrea Laforet, *Canadian Museum of Civilization (Art History)*

George MacDonald, *Canadian Museum of Civilization (Art History)*

Gerald McMaster, *Canadian Museum of Civilization (Art History)*

Peter Wicke, *Direktor Forschungszentrum populäre Musik, Humboldt Universität (Music)*

Sessional Lecturers

Roya Abouzia (Art History)

Michael Bussiere (Music)

Lisette Canton (Music)

Patricia Goodspeed (Film Studies)

George Kellaris (Art History)

Tom McSorley (Film Studies)

John Ramlochand (Film Studies)

Theresa Rowat (Film Studies)

Ann Schau (Music)

Barbara Stevenson (Art History)

Kim Veltman (Art and Culture)

Research Associates

Robert Barclay (Music)

James Burant, *National Archives of Canada (Art History)*

Clifford Ford, *Canadian Musical Heritage Society (Music)*

Anne-Marie Gaston (Music)

Eva Major-Marothy, *National Archives of Canada (Art History)*

Melissa Rombout, *National Archives of Canada (Art History)*

Patricia D. Sutherland, *Canadian Museum of Civilization (Art History)*

Carl Widstrand (Music)

General Information

The School for Studies in Art and Culture administers the University's degree programs in Art History, Film Studies and Music. Details of these degree programs may be found under separate entries for Art History (p. 140), Film Studies (p. 266), and Music (p. 411).

The School, through the Office of the Director, provides advice to students wishing to submit a coherent pattern of courses on an area of the Visual and Performing Arts for a B.A. Pass or Honours (Directed Interdisciplinary Studies). Details of this program may be found under separate entries for the Directed Interdisciplinary Studies (p. 333).

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

The School for Studies in Art and Culture offers the following courses in the study of art and culture:

Art and Culture 08.115

Introduction to Media and Technology in Art and Culture

This course provides students with an introduction to the technological innovations which have had significant impact on the course of twentieth-century cultural and artistic practices. This introduction is achieved through a combination of academic and practical studio work.

Prerequisite: Enrolment in one of the programs of the School for Studies in Art and Culture or the School of Journalism and Communication, or in the Arts Canterbury program, and permission of the School.

Lectures and studio demonstrations three hours a week.

Art and Culture 08.395

Visual and Performing Arts in the Twentieth Century

This interdisciplinary course is designed to examine selected aspects of the creation, distribution and reception of the arts in this century. The focus of the course is on the interplay of aesthetics, ideology and technology in music, theatre, film, art and architecture.

Prerequisite: Third-year standing and permission of the School.

Lectures three hours a week.

Art and Culture 08.490★

Special Topic in the Study of Art and Culture

This course is designed specifically for Honours students in the School interested in interdisciplinary aspects of their course of study. The course offerings change from year to year.

Prerequisite: Fourth-year standing in one of the School's degree programs or permission of the School.

Lectures and seminars three hours a week.

Art and Culture 08.491★

Special Topic in the Study of Art and Culture

This course is designed specifically for Honours students in the School interested in interdisciplinary aspects of their course of study. The course offerings change from year to year.

Prerequisite: Fourth-year standing in one of the School's degree programs or permission of the School.

Lectures and seminars three hours a week.

(Arts)

423 St. Patrick's Building
Telephone: 520-2342

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Roger Mesley

Supervisor of Graduate Program
Kelly Crossman

Supervisor of Honours Programs
Randi Klebanoff

Supervisor of Architecture/Art History Honours Program
John Shepherd

Supervisor of Pass Programs
Randi Klebanoff

Supervisor of Architecture/Art History Pass Program
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George Swinton

Professor
Ruth Phillips

Associate Professors
Kelly Crossman
Marion Jackson
Diane le Berrurier
Natalie Luckyj
Roger Mesley
James Thompson

Assistant Professor
Angela Carr

Sessional Lecturers
Roya Abouzida
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Jill Delaney
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Michael Bell, *Carleton University Art Gallery*

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Clifford Brown

Christina Cameron, *Canadian Parks Service*

Stephen Inglis, *Canadian Museum of Civilization*

Lilly Koltun, *National Archives of Canada*

Andrea Laforet, *Canadian Museum of Civilization*

George MacDonald, *Canadian Museum of Civilization*

Gerald McMaster, *Canadian Museum of Civilization*

Slide Curator

Barbara Stevenson

General Information

The discipline of Art History offers a wide range of courses, primarily in the history of Western art. Consequently, Pass and Honours programs in Art History are flexible, and within the context of these degree programs students are encouraged to take courses in other departments and disciplines of the Faculty of Arts such as Classics, Film Studies, History, languages and literatures, Music, Philosophy and Religion, as well as in the Faculties of Science and Social Sciences.

Within the requirements for Pass and Honours degrees, students are expected to take courses in the areas that form the undergraduate curriculum: Ancient, Medieval, Renaissance, Baroque and Rococo, Romantic, Modern, Contemporary, North American and Native Art. Courses in the theory of art and in art criticism are offered as adjuncts to those in art history.

A special feature of the Carleton program is an undergraduate *practicum*, in which degree students in their Third- or Fourth-year may receive up to 1.0 credit in Art History for supervised practical experience, working on specific projects in an Ottawa museum or related setting, or on an archaeological site: for example, The National Archives of Canada, The Canadian Museum of Civilization, The National Gallery of Canada.

Courses in the Faculties of Arts, Science, and Social Sciences provide options that complement art history and support certain specializations or career plans in art history. For example, courses in history, literature, languages and music are related, often directly, to the study of all art historical periods. Courses in film studies relate to contemporary art. Chemistry and/or studio work are especially recommended for students wishing to do post-graduate work in restoration and conservation. Certain offerings in sociology and anthropology are particularly useful for students working in the area of native art.

Pass and Honours students in Art History should consider taking a studio course that acquaints them with techniques and materials that have been applied in the history of art, either through the University of Ottawa exchange agreement (see p. 48) or by means of a Letter of Permission. 1.0 credit in studio may be counted as a general option in either the Pass or Honours program. Such courses must be taken in

accordance with University policy and must be approved in advance by the Registrarial Services office.

Students from other departments and disciplines, part-time students and Special students may discover that courses in Art History complement their interests or their programs. Such students may enrol in any course in Art History without the stated prerequisite if permission of the discipline has been obtained. Preparatory reading is expected of all students who enrol without the stated prerequisite, and appropriate reading lists are available from the Art History Administrative Assistant throughout the year.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to discipline regulations and requirements as set out below.

Courses Open to First-Year Students

The following courses are open to First-year students: Art History 11.100, 11.110★, 11.111★, 11.115★, 11.120★, 11.121★, 11.202★, 11.205★, 11.206★, 11.220★, 11.221★, 11.230★, 11.241★, 11.242★, 11.250★, 11.260★, 11.286★, 11.287★.

All students taking an Art History course above the 100-level without the background of Art History 11.100 or 11.110★/11.111★ are strongly advised to prepare themselves by reading a general survey of art history, such as H.W. Janson's *History of Art*, prior to registration in such a course.

Listing of Courses by Field

Students in the Pass, Combined Pass (other than with Architecture), Honours and Combined Honours (other than with Architecture) programs are required to take a certain number of credits from courses in four fields: Ancient and Medieval; Renaissance through 18th Century; Post-1800 European and American; and Canadian and Native. The following is a list of Art History courses by field, including those courses outside fields and those courses where the field may vary from year to year (students are advised to consult Art History each year to determine which of these courses are offered and which field they fall within):

Courses outside fields:

11.100, 11.110★, 11.111★, 11.115★, 11.120★, 11.121★, 11.286★, 11.316★;

Ancient and Medieval:

11.210★, 11.220★, 11.221★, 11.304★, 11.310★, 11.325★, 11.327★, 11.328★, 11.393★, 11.422★, 11.423★, 11.424★;

Renaissance through 18th Century:

11.230★, 11.241★, 11.242★, 11.330★, 11.332★, 11.335★, 11.350★, 11.435★;

Post-1800 European and American:

11.250★, 11.260★, 11.287★, 11.305★, 11.306★, 11.355★, 11.360★, 11.368★, 11.369★, 11.406★, 11.450★, 11.455★, 11.461★, 11.487★;

Canadian and Native:

11.202★, 11.205★, 11.206★, 11.300★, 11.301★, 11.302★, 11.313★, 11.314★, 11.400★, 11.404★, 11.405★;

Field Varies:

11.375★, 11.376★, 11.377★, 11.390★, 11.391★, 11.392★, 11.431★, 11.452★, 11.475★, 11.476★, 11.477★, 11.480★, 11.489★, 11.490★, 11.491★, 11.492★, 11.499.

Pass Programs

Pass Program in Art History

The Pass degree program is designed for students who wish a liberal arts education with an emphasis on art history. Students who decide that they wish to do graduate work, or who contemplate working in museology, should transfer to the Honours program as early as possible, preferably not later than the end of the Second year.

Courses must be chosen in consultation with the Supervisor of Pass Programs. 6.0 credits in Art History are required, as follows:

1. Art History 11.100, or 11.110★ and 11.111★;
2. At least 2.0 credits at the 200-level;
3. At least 2.0 credits at the 300- or 400-levels;
4. 1.0 additional credit in Art History.

The courses offered at the 200-, 300- and 400-levels generally fall into the following four fields:

1. Ancient and Medieval;
2. Renaissance through 18th Century;
3. Post-1800 European and American;
4. Canadian and Native.

Students in a Pass program are required to take at least 1.0 credit above the 100-level in each of the four fields.

Combined Pass Program

The Combined Pass degree program with other departments and disciplines in the Faculties of Arts and Social Sciences requires a minimum of 5.0 Art History credits, which must include:

1. 11.100, or 11.110★ and 11.111★;
2. At least 0.5 credit above the 100-level from each of the following four fields: Ancient and Medieval; Renaissance through 18th Century; Post-1800 European and American; Canadian and Native;

3. At least 1.0 credit at the 300- or 400-level.

Combined Pass Program in Art History and Architecture

The Combined Pass degree program with the School of Architecture requires a minimum of 5.0 Art History credits, which must include:

1. 11.100, or 11.110★ and 11.111★;
2. 11.120★ and 11.121★;
3. 3.0 additional credits, including at least 1.0 at the 300- or 400-level.

Students in this program must take at least 5.0 approved credits in Architecture (see approved list on p. 142), including 1.0 above the 200-level.

Students should note that Architecture courses taken to fulfill the requirements of this program are not transferable to other degree programs in the Faculties of Arts and Social Sciences (with the exception of the Combined Honours Program in Art History and Architecture).

Honours Programs

Honours in Art History

The Honours degree in Art History is designed for students contemplating graduate work in art history or museology, or who for other reasons wish to enrich their knowledge through an additional year of concentrated study.

Courses must be chosen in consultation with the Honours Supervisor. 10.0 credits in Art History are required, as follows:

1. Art History 11.100, or 11.110★ and 11.111★;
2. At least 2.0 credits at the 200-level;
3. At least 3.0 credits at the 300-level, including 11.316★;
4. At least 3.0 credits at the 400-level, no more than 1.5 of which may be directed readings or honours research essay credits.
5. 1.0 additional credit in Art History.

The courses offered at the 200-, 300- and 400-levels generally fall into the following four fields:

1. Ancient and Medieval;
2. Renaissance through 18th Century;
3. Post 1800-European and American;
4. Canadian and Native.

Students in an Honours program are required to take at least 1.0 credit above the 100-level from each of these four fields.

Combined Honours

The Combined Honours degree program with other departments and disciplines in the Faculties of Arts and Social Sciences requires a minimum of 7.0 Art History credits, which must include:

1. 11.100, or 11.110★ and 11.111★;

2. At least 0.5 credit above the 100-level from each of the following four fields: Ancient and Medieval; Renaissance through 18th Century; Post-1800 European and American; Canadian and Native.

3. At least 2.0 credits at the 400-level, no more than 1.0 of which 400-level credits may be directed readings or honours research essay credits.

Combined Honours Program in Art History and Architecture

The Combined Honours degree program with the School of Architecture requires a minimum of 7.0 Art History credits, which must include:

1. 11.100, or 11.110★ and 11.111★;
2. 11.120★ and 11.121★;
3. 5.0 additional credits, including at least 2.0 at the 400-level, no more than 1.0 of which 400-level credits may be directed readings or honours research essay credits.

Students in this program must take at least 7.0 approved credits in Architecture (see the approved list below), including 1.0 credit at the 400-level.

Students should note that Architecture courses taken to fulfill the requirements of this program are not transferable to other degree programs in the Faculties of Arts and Social Sciences (with the exception of the Combined Pass Program in Art History and Architecture).

Approved Architecture Courses

Only the following approved courses in Architecture may be applied toward the architectural component of the combined B.A. degrees: Architecture 76.105★, 76.106★, 76.203★, 76.212★, 76.221★, 76.302★, 76.307★, 76.308★, 76.309★, 76.310★, 76.315★, 76.318★, 76.319★, 76.391★, 76.408★, 76.423★, 76.424★, 76.452★, 76.488★, 77.101★, 77.113★, 77.131★, 77.135★, 77.201★, 77.206★, 77.213★, 77.231★, 77.300★, 77.302★, 77.303★, 77.306★, 77.313★, 77.330★, 77.350★, 77.391★, 77.401★, 77.420★, 77.440★, 77.488★, 78.350★, 79.320★.

Language Study and Requirements

It is strongly recommended, but not required, that Pass students in Art History have the equivalent of at least a First-year course in a language suitable to their program. French 20.106★ or 20.150, German 22.118, Italian 26.100 or 26.101★ and 26.102★ and Spanish 38.115 are recommended.

Honours students are required to demonstrate a proficient reading knowledge of French, German, Italian, or another language relevant to their program. A grade of *C+* or better in French 20.106★ or 20.150, German 22.118, Italian 26.100, or 26.101★ and 26.102★, or Spanish 38.115 will be accepted in lieu of a reading examination. If advanced study in art history is contemplated, a reading knowledge at this level is recommended in both French and German, as these are requirements of most graduate schools.

Graduate Study

A Master of Arts program in Canadian art history, including Canadian native art, is offered through the Art History program of the School for Studies in Art and Culture. (For further details see the current Calendar of the Faculty of Graduate Studies and Research.)

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Art History 11.100

A History of Western Art: Prehistory to the Present

This course surveys the art and architecture of the Western World from the Paleolithic era to the present day.

Precludes additional credit for Art History 11.110★ and/or 11.111★.

Lectures and tutorial three hours a week.

Art History 11.110★

Western Art: Prehistory to Medieval

This course surveys the art and architecture of the western world from the Paleolithic era to the end of the Gothic period.

Precludes additional credit for Art History 11.100.

Lectures and tutorial three hours a week.

Art History 11.111★

Western Art: Renaissance to the Present

This course surveys the art and architecture of the western world from the beginning of the Renaissance to the present day.

Precludes additional credit for Art History 11.100.

Lectures and tutorial three hours a week.

Art History 11.115★

Art as Visual Communication

This course addresses the question "What makes a work of art?" A wide variety of visual material is organized topically in order to examine the elements of art (line, shape, value, colour, texture, space), the principles of pictorial organization, the materials and techniques of art, and recurrent tendencies in artistic styles and outlooks.

Lectures and tutorial three hours a week.

Art History 11.120★

Introduction to Architectural History: Prehistoric to Medieval

This is an introductory survey of major world traditions in architecture, concentrating on the organizing principles and formal properties of buildings. The course covers ancient and medieval architecture in Europe, Asia and America.

Precludes additional credit for Architecture 76.110★ and 76.120★ (no longer offered).

Lectures and tutorial three hours a week.

Art History 11.121★

Western Architecture: Renaissance to the Present

This course examines the architecture of Europe and America from the Italian Renaissance to the modern world. Emphasis is placed on an understanding of the interrelationship among history, theory and design in the creation of architectural form.

Precludes additional credit for Architecture 76.220★ and 76.121★ (no longer offered).

Lectures and tutorial three hours a week.

Art History 11.202★

Canadian Art, Origins to Present

This course surveys Canadian art from the beginning of European settlement to the present.

Lectures three hours a week.

Art History 11.205★

Arts of the First Peoples: The Woodlands, the Plains and the Subarctic

This course is an introductory survey of the visual artistic traditions of the aboriginal peoples of the eastern and central regions of North America including the Woodlands, the eastern subarctic and the Plains from prehistoric to contemporary times.

Lectures three hours a week.

Art History 11.206★

Arts of the First Peoples: The Southwest, the West Coast and the Arctic

This course is an introductory survey of the visual artistic traditions of the aboriginal peoples of the western and northern regions of North America including the southwest, the plateau, northwest coast and the arctic from prehistoric to contemporary times.

Lectures three hours a week.

Art History 11.210★

Greek and Roman Art and Archaeology

Offered in the Department of Classics as Classical Civilization 13.232★.

Art History 11.220★

Western Medieval Art

The development of Western medieval art from the earliest Christian productions through the late Gothic period is studied, with some reference to Eastern medieval art for purposes of comparison.

Lectures three hours a week.

Art History 11.221★

Eastern Medieval Art

This course examines the sources and the development of the arts in the Byzantine Empire as well as the relationship of its artistic productions to those of neighbouring countries.

Lectures three hours a week.

Art History 11.230★

Renaissance Art

This course emphasizes art in Italy from 1400 to 1600, with reference to developments in northern Europe.

Lectures three hours a week.

Art History 11.241★

Seventeenth-Century European Art

This course surveys Baroque painting, sculpture and architecture in Europe during the seventeenth century.

Lectures three hours a week.

Art History 11.242★

Eighteenth-Century European Art

This course surveys Rococo and Early Romantic painting, sculpture and architecture in Europe during the eighteenth century.

Lectures three hours a week.

Art History 11.250★

Nineteenth-Century European Art

This course surveys the major artists and artistic movements of nineteenth-century Europe.

Lectures three hours a week.

Art History 11.260★

Twentieth-Century European Art

This course surveys the major artists and movements of twentieth-century Europe.

Lectures three hours a week.

Art History 11.286★

Art and Ideas: From Ancient Greece to the Twentieth Century

A survey of theories that have shaped the Western approach to art and art criticism, including Plato, Aquinas, Kant, Hegel and Nietzsche. (Also listed as Philosophy 32.286★.)

Lectures three hours a week.

Art History 11.287★

Art and Ideas: The Twentieth Century

A survey of theories that have shaped the Western approach to art and art criticism including formalist, psychological, sociological, phenomenological, semiotic, poststructural and aesthetic approaches and including such thinkers as Fry, Greenberg, Freud, Arnheim, Hauser, Heidegger and Derrida. (Also listed as Philosophy 32.287★.)

Lectures three hours a week.

Art History 11.300★

Canadian Painting and Sculpture

This course examines particular aspects of nineteenth-and/or twentieth-century painting and sculpture in Canada. The topic for 1996-97 is Canadian landscape painting from the topographical artists through the Group of Seven.

Prerequisite: Art History 11.202★ (or 11.200★ or 11.201★, no longer offered) or permission of the Discipline.

Lectures three hours a week.

Art History 11.301★

Contemporary Canadian Art

This course examines in depth the art of selected groups and individuals working in Canada from the Second World War to the present.

Prerequisite: Art History 11.202★ or 11.260★, or permission of the Discipline.

Lectures three hours a week.

Art History 11.302★

Canadian Architecture

Offered in the School of Architecture as Architecture 76.302★.

Prerequisites: Art History 11.100 (or 11.110★ and 11.111★), or 11.120★ and 11.121★, or Architecture 76.120★ and 76.121★.

Art History 11.304★

Pre-Classical Greek Art and Archeology

Offered in the Department of Classics as Classical Civilization 13.331★.

Art History 11.305★

American Architecture

This course studies the cultural history of the United States as expressed through its architectural heritage. Selected buildings and complexes from the earliest settlements through the early twentieth century are examined.

Lectures three hours a week.

Art History 11.306★

American Painting and Sculpture

This course studies the evolution of painting and sculpture in the United States from colonial times to the early twentieth century.

Lectures three hours a week.

Art History 11.310★

Etruscan and Roman Art

This course studies Etruscan art and the development of Roman art and architecture through the Constantinian period. (Also listed as Classical Civilization 13.334★.)

Prerequisite: Second-year standing or permission of the Discipline.

Lectures three hours a week.

Art History 11.313★

Themes and Issues in African, Oceanic and Native American Arts

This course addresses approaches, issues and themes in the study of the artistic traditions of non-Western people in Africa, the Pacific and the Americas. Topics include the history of the discourse of "primitive art" as well as the cross-cultural examination of particular forms of artistic expression, such as masquerading and shrine assemblages, and of important contexts for art, such as divine kingship and shamanism.

Lectures three hours a week.

Art History 11.314★

Inuit Art

This course surveys the prehistoric, historic and contemporary art of the Canadian Inuit with reference to the art of the Eskimos of Alaska and Greenland.

Lectures three hours a week.

Art History 11.316★

History and Methods of Art History

The study of the history of art history and the methodologies and research tools employed by art historians.

Prerequisites: Minimum Third-year standing in Art History or permission of the Discipline.

Seminar three hours a week.

Art History 11.325★

Russian Art

The development of Russian art is studied from its origins into the eighteenth century with an emphasis on Byzantine influences as opposed to local characteristics.

Prerequisite: Art History 11.121★ or permission of the Discipline.

Lectures three hours a week.

Art History 11.327★

Gothic Architecture and Monumental Sculpture

This course investigates the sources and development of Gothic architecture and monumental sculpture in Northern and Southern Europe from its origins in the twelfth century through the fifteenth century.

Prerequisite: Art History 11.220★ or permission of the Discipline.

Lectures three hours a week.

Art History 11.328★

Gothic Minor Arts

The so-called minor arts of the Gothic tradition from the twelfth through the fifteenth century are studied, including stained glass, manuscripts, tapestries and embroideries, panel painting, goldsmithery and ivory carvings.

Prerequisite: Art History 11.220★ or permission of the Discipline.

Lectures three hours a week.

Art History 11.330★

Florentine Renaissance Art

This course examines Florentine art in its development from late Trecento ideas to the emergence of the High Renaissance vocabulary.

Lectures three hours a week.

Art History 11.332★

Italian Art of the High Renaissance

This course examines the art of the principal representatives of the High Renaissance including Leonardo da Vinci, Michelangelo, Raphael, Titian and the Florentine circle of Andrea del Sarto.

Lectures three hours a week.

Art History 11.335★

Northern Renaissance Art

This course examines the development of Flemish and German Renaissance art.

Lectures three hours a week.

Art History 11.340★

Historical Techniques and Materials of Art

This course offers an introduction to works of art as physical objects, providing a studio experience with materials and techniques used by artists through the ages. Studio projects in drawing, painting, and other media are complemented by lectures and discussion relating the techniques and materials to their historical context and art historical significance.

Prerequisite: Third-year standing in Art History or permission of the Discipline.

Seminars two hours a week, studio two hours a week.

Art History 11.350★

British Art and Architecture: 1600-1850

This course concerns British art and architecture from the early seventeenth to the mid-nineteenth century. Lectures three hours a week.

Art History 11.355★

Late Nineteenth-Century Art in France

This course treats the major artists of the Impressionist and Post-Impressionist movements in France.

Lectures three hours a week.

Art History 11.360★

Art Since 1945

This course treats major artists and artistic movements from 1945 to the present. Emphasis is placed on the United States.

Prerequisite: Art History 11.260★ or permission of the Discipline.

Lectures three hours a week.

Art History 11.368★

Modern Architecture: The Nineteenth Century

This course covers selected topics in nineteenth-century architecture and urban planning in Europe and North America from the French Revolution to American commercial architecture.

Precludes additional credit for Architecture 76.308★. Lectures three hours a week.

Art History 11.369★

Modern Architecture: The Twentieth Century

This course considers the Bauhaus and the New Brutalism, and also includes such architects as Gaudi, Wright, Le Corbusier, Mies van der Rohe and Buckminster Fuller.

Precludes additional credit for Architecture 76.309★. Lectures three hours a week.

Art History 11.375★

Seminar on a Selected Museum Exhibition

This seminar focuses on a major exhibition. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum. The selected exhibition for 1996-97 is the Montreal Museum of Fine Arts 'Lost Paradise: Symbolist Europe', an international exhibition of late nineteenth-century Symbolist art.

Prerequisite: Permission of the Discipline.

Seminar three hours a week.

Art History 11.376★

Seminar on a Selected Museum Exhibition

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.

Prerequisite: Permission of the Discipline.

Seminar three hours a week.

Art History 11.377★

Seminar on a Selected Museum Exhibition

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.

Prerequisite: Permission of the Discipline.

Seminar three hours a week.

Art History 11.390★, 11.391★, 11.392★
Practicum in Art History

An art history option enabling students to gain practical experience in the discipline by working on specific projects under the supervision of the staff of one of the museums or related settings in the Ottawa area. Readings, discussions and reports are integrated with the program in the different settings. Available institutions and positions within them on particular projects may change from year to year. A maximum of one credit of practicum may be offered in fulfillment of Art History requirements.

Prerequisite: Pass or Honours Art History registration with Third- or Fourth-year standing and a B+ or better average in Art History courses, or permission of the Discipline. Art History 11.390★ is normally a prerequisite for 11.391★ and 11.392★.

Art History 11.393★

Practicum in Art History through Archaeology

An art history option enabling students to gain practical experience in the discipline by participating in specific archaeological projects (on land/or underwater) under the supervision of project staff and Carleton faculty. Readings, lectures and study trips are integrated with the program in the different settings. Available projects may change from year to year. A maximum of one credit of practicum may be offered in fulfillment of Art History requirements.

Prerequisites: Pass or Honours Art History registration with Third- or Fourth-year standing and a B+ or better average in Art History courses, or permission of the Discipline.

Art History 11.400★

Topics in Canadian Art

This seminar examines in detail the contribution of selected individuals or movements in Canadian art in the context of Canadian society and the history of modern art. The topic for 1996-97 is "Making Their Mark: Canadian Women Sculptors in Context 1920-50."

Prerequisite: Art History 11.202★ or 11.300★ or 11.301★ or permission of the Discipline.

Seminar three hours a week.

Art History 11.404★

Topics in Contemporary Inuit Art

This course examines selected aspects of the contemporary arts of Canadian Inuit artists.

Seminar three hours a week.

Art History 11.405★

Topics in Canadian Indian Art

This course examines selected aspects of the contemporary arts of Canadian artists of Indian ancestry.

Seminar three hours a week.

Art History 11.406★

Topics in American Art

This seminar examines selected aspects of American art and architecture.

Prerequisite: Permission of the Discipline.

Seminar three hours a week.

Art History 11.422★

Topics in Eastern Medieval Art

This seminar studies aspects of Eastern Medieval art and their influences in Western Europe. The topic for

1996-97 will be "Early Christian and Byzantine Manuscripts".

Prerequisite: Art History 11.221★ or permission of the Discipline.

Seminar two hours a week.

Art History 11.423★

Topics in Western Medieval Art

This seminar focuses on aspects of Western Medieval art and their relationship to the Eastern Mediterranean area. The topic for 1996-97 "Gothic Minor Arts".

Prerequisite: Art History 11.220★ or permission of the Discipline.

Seminar two hours a week.

Art History 11.424★

The Interrelationship of Art History and Underwater Archaeology

This course considers the history of underwater archaeology, its relation to the development of underwater technology and land archaeology, and some of the most interesting art historical finds in sunken cities and shipwrecks.

Prerequisites: Art History 11.100 (or 11.110★/11.111★ and at least one of 11.210★, 11.220★ or 11.221★, or permission of the Discipline.

Seminar two hours a week.

Art History 11.431★

Topics in Iconography

In this course, attention is focused on selected problems in the meaning of visual images and available textual sources.

Lectures three hours a week.

Art History 11.435★

Topics in Renaissance Art

This seminar deals with selected aspects of Renaissance art and their influence. The topic for 1996-97 is "Image and Identity: Portraiture in the Renaissance."

Lectures three hours a week.

Art History 11.450

Topics in British Romantic Art

This seminar examines selected aspects of British art and architecture of the eighteenth and early nineteenth centuries.

Prerequisite: Art History 11.350★ or permission of the Discipline.

Seminar two hours a week.

Art History 11.452★

Topics in Spanish Art

This seminar examines selected aspects of Spanish art.

Prerequisite: Honours standing in Art History or permission of the Discipline.

Seminar two hours a week.

Art History 11.455★

Topics in Nineteenth-Century European Art

This course examines selected aspects of nineteenth-century European art. The topic for 1996-97 is "Gauguin and His Circle in France".

Prerequisite: Art History 11.250★ or 11.355★ or permission of the Discipline.

Seminar three hours a week.

Art History 11.461 ★

Topics in Twentieth-Century Art

This seminar examines selected aspects of twentieth-century art. The topic for 1996-97 is "A Contemporary Environmental Art: From earthworks to Eco-Art".

Prerequisite: Art History 11.260 ★ or permission of the Discipline.

Seminar three hours a week.

Art History 11.475 ★

Seminar on a Selected Museum Exhibition

This seminar focuses on a major exhibition. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.

Prerequisites: Fourth-year Honours standing and permission of the Discipline.

Seminar three hours a week.

Art History 11.476 ★

Seminar on a Selected Museum Exhibition

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.

Prerequisites: Fourth-year Honours standing and permission of the Discipline.

Seminar three hours a week.

Art History 11.477 ★

Seminar on a Selected Museum Exhibition

This seminar focuses on a major exhibition held at a local museum. Students enrolled in this course are expected to bear all travel and other costs arising from required visits to the museum.

Prerequisite: Permission of the Discipline.

Seminar three hours a week.

Art History 11.480 ★

Topics in Architectural History

This course examines selected aspects of architectural history from ancient times to the present. The topic for 1996-97 is "Readings in Twentieth Century Architectural History".

Seminar three hours a week.

Art History 11.487 ★

Topics in Art Criticism

This course introduces major problems and theories in art criticism with particular attention to whether the theories can be accepted.

Prerequisite: Permission of the Discipline.

Seminar three hours a week.

Art History 11.489 ★

Topics in Art History

This course examines selected aspects of art history from ancient times to the present.

Seminar three hours a week.

Art History 11.490 ★, 11.491 ★, 11.492 ★

Directed Readings and Research

These courses consist of supervised readings and research projects in a specific area of art history to be chosen in consultation with the Honours Supervisor. Participation in these courses may require attendance in a course offered at a lower level. Guidelines must be obtained from the Honours supervisor prior to registration. A written project outline, approved by the supervising Art History faculty member, must be submitted to the Honours supervisor by the last day for course changes.

Prerequisites: Fourth-year Honours standing and permission of the Discipline.

Art History 11.499

Honours Research Essay

This course, designed for independent research under the supervision of an Art History faculty member is open to those students with B+ standing in their Art History courses. An essay of approximately 10,000 words is the usual assignment. Guidelines must be obtained from the Honours Supervisor prior to registration. A written project outline, approved by the supervisor, must be submitted to the Honours Supervisor by the last day for course changes.

Prerequisites: Fourth-year Honours standing and permission of the Discipline.

(Science)

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Associate Member
V.L. Seligy

Teaching Staff

Professors
K.B. Storey
C.S. Tsai
H. Yamazaki

Assistant Professor
I.B. Lambert

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 112), in addition to all regulations and requirements of the Institute as set out below.

Major Program

Bachelor of Science in Biochemistry

The Institute of Biochemistry offers a four-year (20.0 credit) program leading to a B.Sc. majoring in Biochemistry and intended to provide a broad basic training for students who have a general interest in biological functions at the molecular level or who are planning a career in biochemistry or a related field of biomedical science that does not demand post-graduate study. Courses in Biology and Chemistry (and resources from these departments) are integrated into the program to provide the background

that is fundamental to an understanding of the biochemistry of animals, microorganisms and plants.

Many graduates from the 15-credit B.Sc. programs in Biology or Chemistry may qualify for admission to the final year of the Major B.Sc. in Biochemistry, if they have successfully completed the 300-level Biochemistry courses.

Students entering the program must satisfy the general requirements for a Major B.Sc. (p. 108). The following 20.0 credits are required:

1. 3.5 Biology credits: 61.103★ and 61.104★ or equivalent, 61.214★, 61.314★, either 61.201★ or 61.202★, either 61.325★ or 61.335★, and 0.5 credit selected from approved 300- or 400-level Biology courses (see Note 6 p. 149);
2. 4.5 Chemistry credits: 65.100, 65.210, 65.220, 65.231★, 65.321★, either 65.322★ or 65.325★;
3. 3.5 Biochemistry credits: 63.220★ or equivalent, 63.305★, 63.310, 63.401★, and at least two of 63.402★, or 63.404★ or 63.405★;
4. Physics 75.101★ and 75.102★, or 75.105; Mathematics 69.107★ and 69.117★;
5. 2.0 approved Arts and Social Science credits;
6. 3.0 credits related to the student's area of interest. Some recommended courses include: Biochemistry, 63.404★, 63.405★, 63.491★, Biology 61.201★, 61.202★, 61.221★, 61.392★ and any of the Biology courses listed in Note 6 (p. 149), Chemistry 65.311★, 65.312★, 65.322★, 65.325★, 65.353★, 65.354★, 65.370★, 65.380★, 65.420★, 65.422★, 65.423★, Physics 75.235★, 75.236★, Mathematics 69.207★, 69.208★, 69.217★, 69.257★, Computer Science 95.103★;
7. 1.5 credits free option or 1.0 credit if Biology 61.102 (no longer offered) is taken in lieu of the OAC in Biology.

Honours Programs

Honours Bachelor of Science in Biochemistry and Biotechnology

See description of this special program on p. 162.

Honours Bachelor of Science in Biochemistry

The Institute of Biochemistry also offers a four-year program leading to an Honours B.Sc. in Biochemistry, intended to provide more specialized training for biochemical research or a related career. An Honours degree with above-average standing is normally required for post-graduate studies in this discipline.

Students entering the program must satisfy the general requirements for B.Sc. Honours (p. 107). The following 20.0 credits are required, taken in a pattern approved by the Director of the Institute:

1. Biology 61.103★ and 61.104★ or equivalent, 61.214★, 61.314★, either 61.201★ or 61.202★, either 61.325★ or 61.335★, and 0.5 credit selected from approved 300- or 400-level Biology courses (see Note 6 p. 155);

2. Chemistry 65.100, 65.210, 65.220, 65.231★, 65.321★, 65.322★, 65.325★;
3. (a) Biochemistry 63.220★ or equivalent, 63.305★, 63.310, 63.401★, 63.402★, and 63.498; (b) At least one of Biochemistry 63.404★ and 63.405★;
4. Physics 75.101★ and 75.102★, or 75.105, Mathematics 69.107★, 69.117★ and at least one Mathematics 0.5 credit at the 200-level;
5. 2.0 approved Arts or Social Science credits;
6. 1.5 credits related to the student's area of specialization. Some recommended courses include: Biochemistry 63.404★, 63.405★, Biology 61.221★, 61.392★, and any of the Biology courses listed in Note 6, Chemistry 65.311★, 65.312★, 65.353★, 65.354★, 65.370★, 65.380★, 65.420★, 65.422★, 65.423★, Physics 75.235★, 75.236★, Mathematics 69.207★, 69.208★, 69.217★, 69.257★, Computer Science 95.103★;
7. 1.0 free option credit or 0.5 free option credit if Biology 61.102 (no longer offered) is taken in lieu of the Ontario Academic Credit in Biology.

Notes on Programs:

1. A completed credit for Biology 61.102 or 61.209★ and 61.230★ may replace the requirement for Biology 61.103★ and 61.104★. Students who have completed only Biology 61.230★ may replace 61.103★ and 61.104★ with 61.230★ plus a 0.5 credit Biology elective. Students who have completed only 61.209★ must pass 61.103★ and 61.104★; Biology 61.209★ may then be credited as a free elective.
2. For the purposes of calculation, the Major or Honours subjects include all Biochemistry courses, plus the Biology and Chemistry courses fulfilling requirements 1 and 2 in each program.
3. In choosing a program, students should consider the prerequisites required for any courses that they wish to take in later years. In particular, some options may be offered only in alternate years and may require as prerequisites one or other of Biology 61.325★, 61.331★ and 61.335★. Because of timetable constraints, students may have to take Chemistry 65.210 and Biology 61.201★ or 61.202★ in different years.
4. Credit will not be given for Biology 61.220★ or Biochemistry 63.220★ taken after Biochemistry 63.310 or equivalent.
5. "Permission of the Institute" in course prerequisites normally means permission of the Director or the Honours Project co-ordinator.
6. The following 300-400 level Biology courses are approved to satisfy requirement 1 for Biochemistry students: 61.325★, 61.331★, 61.335★, 61.351★, 61.355★, 61.408★, 61.409★, 61.413★, 61.414★, 61.416★, 61.419★, 61.421★, 61.426★, 61.429★, 61.430★, 61.431★, 61.432★, 61.433★, 61.435 and 61.455.
7. To qualify for graduation with a Major in Biochemistry students must meet the requirements on p. 112 except that they must present 20.0 approved full credits (or equivalent) beyond Qualifying-University

year and have a grade of C- or better in at least half of the 20.0 credits.

A typical First Year course pattern in a Biochemistry program will be the same as that for Biochemistry and Biotechnology. (See p. 163.)

Graduate Program

No graduate program is offered by the Institute but the graduate offerings of the Departments of Biology and Chemistry include projects and courses that may be appropriate for students with an interest in biochemistry. Details are found in the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Biochemistry 63.220★

Cell Physiology and Biochemistry

A lecture and laboratory course on cellular functions and their inter-relationships. It introduces topics including thermodynamics, membrane structure and function, transport mechanisms, basic metabolic pathways, energy production and utilization, communications between cells. (Also listed as Biology 61.220★.)

Precludes additional credit for Biology 61.220★. Credit will not normally be given for Biochemistry 63.220★ or equivalent taken after Biochemistry 63.310.

Prerequisites: Biology 61.103★ and 61.104★ or equivalent, Chemistry 65.100 or permission of the Institute.

Lectures three hours a week, laboratory four hours a week.

Biochemistry 63.305★

Practical Biochemistry

A laboratory and tutorial course introducing the basics of experimental biochemistry and illustrating the theory and concepts dealt with in Biochemistry 63.310.

Prerequisites: Chemistry 65.220; Chemistry 65.210 or Biochemistry 63.220★/Biology 61.220★ with a grade of C- or better, or permission of the Institute. Biochemistry 63.310 or equivalent is recommended as a co-requisite.

Laboratory four hours a week plus biweekly assignments.

Biochemistry 63.310

General Biochemistry

Chemistry and metabolism of proteins, lipids, carbohydrates and nucleic acids. Mechanism of action of enzymes. Metabolic control mechanisms and inter-relationships. Biological oxidation. Biosynthesis of structural, storage and informational compounds.

Prerequisites: Chemistry 65.220; Chemistry 65.210

or Biochemistry 63.220★/Biology 61.220★ with a grade of C- or better, or permission of the Institute. A course in genetics is strongly recommended. Three lectures a week.

Biochemistry 63.401★

Methods in Biochemistry

The course deals with the principles and applications of modern biochemical methodology, including use of radioisotope tracers, ultracentrifugation, electrophoresis and ion-exchange chromatography.

Prerequisite: Biochemistry 63.305★ or permission of the Institute.

Lectures and discussion two hours, laboratory six hours a week.

Biochemistry 63.402★

Biomacromolecules

Biochemistry of polysaccharides, proteins and nucleic acids. Discussion of experimental approaches to purification and conformational studies of biomacromolecules, their interaction in solutions, function and regulation of enzymes. Workshop sessions include discussion of experimental design and interpretation, and solving of related numerical problems.

Prerequisite: Biochemistry 63.310 or permission of the Institute.

Lectures two hours, workshop two hours a week.

Biochemistry 63.404★

Industrial Biochemistry

A course illustrating the application of biochemistry to the production of biological compounds useful in nutrition, medicine, and the food and chemical industries. The course also reviews the general strategies for efficient production of these compounds by controlling the activities of living cells or enzymes.

Prerequisite: Biochemistry 63.310 or permission of the Institute.

Lectures three hours a week.

Biochemistry 63.405★

Biochemical Regulation

A half credit in biochemical regulation. Topics include regulation at the transcriptional, translational and metabolic level. Regulation of cell and subcellular organelle function and other timely topics may also be included. A detailed course outline is available from the instructor in any given year.

Precludes additional credit for Biochemistry 63.403★ (no longer offered).

Prerequisite: Biochemistry 63.310.

Lectures three hours a week.

Biochemistry 63.491★

Selected Topics in Biochemistry

Selected topics of current interest in biochemistry are offered upon approval by the Director in consultation with members of the Institute.

Biochemistry 63.498

Research Project

Students carry out a research project approved by the Director, under the supervision of a faculty member of the Institute, in either the Biology or Chemistry departments. A report must be submitted to the supervisor by the last day of classes, and will be examined by a committee. Extension to the deadline will be allowed only with the permission of the Institute under exceptional circumstances.

Prerequisites: Biochemistry 63.305★ and 63.310 or equivalent, and eligibility to continue in Honours Biochemistry or in Biochemistry and Biotechnology.

Lectures and associated work average at least eight hours a week.

(Science/Social Sciences)

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J. Sinclair

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M.R. Forbes
I.B. Lambert
M.L. Smith
J.P. Vierula

Adjunct Research Professors
S.P.J. Brooks (*Health Canada*)
D.C.W. Brown (*Agriculture Canada*)
M.J. Canny
S. Gledzie (*Agriculture Canada*)
W.D. Gould (*Natural Resources Canada*)
B.F. Johnson
L. Lefkovitch (*Agriculture Canada*)
B.L.A. Miki (*Agriculture Canada*)
V.L. Seligy (*Health Canada*)
D.M. Wood (*Agriculture Canada*)

General Information

Students intending to major in Biology are strongly advised to acquire a good background in chemistry and physics as well as OAC mathematics or equivalent level.

Undergraduate Programs

The Department of Biology offers both Honours and Major/Pass programs leading to either a B.Sc. or a B.A. in Biology. Students enrolled in any of these programs must arrange their courses in consultation with the Chair of the Department, in one of the patterns outlined. None of the courses in the Department of Biology are available by means of Challenge for Credit.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 112, Faculty of Science and p. 81, Faculties of Arts and Social Sciences), in addition to all departmental regulations and requirements as set out below.

For Biology Honours students, the Honours GPA is calculated on the basis of all Biology courses taken by a student during his or her degree program and counted towards the degree. For students in Biology Combined Honours programs, their Honours GPA will be calculated on the basis of all required credits in the two Honours subjects as stated in the respective program requirements.

For Biology Major students, the Major GPA is calculated on the basis of all biology courses taken by the student during his or her degree program and counted towards the degree. For students in Biology Combined Pass programs, their major GPA will be calculated on the basis of all credits counted towards the degree in the two Major subjects.

B.Sc. (Honours) Program

The Honours program in Biology is primarily intended for students planning a professional career in research, teaching or administration in biology, or in one of the fields of applied biology, such as the health sciences, agriculture or environmental science. An Honours degree is usually essential for admission to graduate studies. Students planning such a career are strongly advised to enter the Honours program as early as possible, certainly by the end of the Second year. Students must complete the program shown in the Chart (see p. 153) and satisfy the general requirements for Honours stated on p. 109 and take the following 20.0 credits in a pattern approved by the Chair. (This allows specialization in such biological subdivisions as ecology, behaviour, cell and molecular biology, genetics, microbiology, plant or animal physiology, and systematics.)

1. 7.0 Biology credits to include Biology 61.103★ and

61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, one of 61.325★ or 61.335★, 2.0 credits advanced Biology options, and 61.498;

2. Chemistry 65.100, either Physics 75.105, or 75.101★ and 75.102★, Mathematics 69.107★ and either 69.117★ or 69.257★, or equivalent;

3. 2.0 additional Science credits above the 100-level and not in Biology;

4. 1.0 additional credit, chosen in consultation with the Chair related to the student's area of specialization;

5. 4.0 advanced Science credits, selected in consultation with the Chair or a faculty member working in the area of specialization chosen by the student;

6. 2.0 approved credits offered by the Faculties of Arts or Social Sciences;

7. 1.0 free-option credit.

Fourth-year students are strongly urged to attend the departmental research seminars.

Areas of Specialization

Students should choose their advanced Science and Biology option credits at the 300-and 400-level so that they can develop an area of specialization according to their preferred area of biology. Possible areas of specialization include molecular and cellular biology, microbiology, plant and animal physiology, animal behaviour, ecology, and systematics. Note that 400-level courses can be taken by Biology Majors in their Third year of study, provided the appropriate prerequisites are met.

Courses should be chosen in consultation with the Chair or a faculty member working in an area close to the interest of the student. This consultation should preferably begin before entering the Third year, to ensure that courses that may be given only in alternate years are taken in the correct sequence. In any case, students must consult the Chair before registering in the Fourth year.

Biology 61.361★ is strongly recommended for students in ecology, animal behaviour and systematics.

Honours in Biology and Biotechnology

See p. 162.

Combined Honours in Biology and Physical Geography

Program advisers: L. Fahrig (Biology) and P.J. Williams (Geography).

Students desiring a comprehensive basic education in both biology and physical geography may apply for admission to a Combined Honours B.Sc. program. Applicants must satisfy entry requirements of the Honours B.Sc. program.

Course requirements of the Combined Honours B.Sc. program are 20.0 credits including:

1. Biology 61.103★ and 61.104★, Geography 45.105, Mathematics 69.107★ and either 69.117★ or 69.257★, Chemistry 65.100;

2. 2.0 optional credits, which are acceptable courses offered by the Faculties of Arts or Social Sciences.

1.0 credit in Geography, other than the Physical Geography courses listed on p. 284, is recommended;

3. 1.0 additional Science credit from the list on p. 110 (either Physics 75.105, or 75.101★ and 75.102★ is required unless OAC Physics is presented as an entrance credit);

4. 1.0 free-option credit;

5. 10.0 credits in Biology (or Biochemistry) and Physical Geography (see courses listed on p. 284) beyond First-year level, including at least 0.5 credit involving a field course. Not more than 6.0 credits in this group should be taken in one department and not more than 6.0 may be at the 200-level;

6. 1.0 additional credit in Science or Computer Science above the 100-level, not in Biology or Geography and chosen in consultation with the student's program adviser;

7. Biology 61.498 or Geography 45.496.

Combined Honours in Biology and Geology

Program advisers: S.B. Peck (Biology) and R.T. Patterson (Earth Sciences).

Students desiring a comprehensive basic training in both biology and geology may apply for admission to a Combined Honours program, on completion of the First year of the Science program. Applicants must be of Honours standing and must have achieved grades of C+ or better in both Biology 61.103★, 61.104★, and Geology 67.100.

Course requirements of the Combined Honours program are as follows:

1. Biology 61.103★, 61.104★, Geology 67.100, Mathematics 69.107★ and 69.117★. One of, Chemistry 65.100, either Physics 75.105, or 75.101★ and 75.102★. (The omitted subject, i.e. chemistry or physics, must have been taken at the OAC level.)

2. 10.0 credits in Biology (or Biochemistry) and Geology beyond First-year level, including at least 0.5 credit field course. Not more than 6.0 credits in this group should be taken in one department and not more than 6.0 may be at the 200-level.

3. Biology 61.498 or Geology 67.498.

4. 0.5 credit in Statistics (Mathematics 69.257★ is recommended) and 0.5 credit in Computer Science (Computer Science 95.104★ is recommended).

5. 3.0 optional credits, at least 2.0 of which must be acceptable credits offered by the Faculties of Arts or Social Sciences.

6. 1.0 Science elective credit.

7. A language requirement must be met during the Third year by obtaining a credit in, or demonstrating reading proficiency in one of French, German, Russian, Spanish, Italian, Latin, Greek, or any language acceptable to the program advisers and in which suitable arrangements can be made for the examination.

Combined Bachelor of Science Honours in Biology and Psychology

Program advisers: D. R. Gardner (Biology) and J. Kelly (Psychology)

Students desiring a comprehensive basic education in the neurosciences may apply for admission to this Combined Honours B.Sc. program. Applicants must satisfy entry requirements of the Honours B.Sc. program.

Course requirements of the Combined Honours B.Sc. program are 20 credits, as follows:

First Year

Biology 61.103★, 61.104★,
Psychology 49.100 as a Social Science elective;
Mathematics 69.107★ and 69.117★;
Chemistry 65.100;
Physics, either 75.105, or 75.101★ and 75.102★.

Second Year

Psychology 49.200;
Psychology 49.220★ and 49.270★;
Biology 61.201★ and 61.220★;
1.0 credit from Arts or Social Sciences other than Psychology;
Chemistry 65.220.

Third Year

1.0 credit from Psychology Science Continuation courses;
One of Psychology 49.320 or 49.370 Honours Seminars;
Mathematics 69.257★ and 69.259★ (Psychology 49.300 may be substituted);

Biology 61.335★ and 61.214★;
1.0 Biology or Biochemistry option.

Fourth Year

Psychology 49.498 or Biology 61.498 in neurophysiology, animal behaviour, neuropsychology or related topic;
1.0 credit from Psychology Science Continuation courses;
Biology 61.435 or equivalent;
1.0 advanced credit in Biology;
1.0 free-option credit.

B.Sc. (Major) Program

The Bachelor of Science program in Biology recognizes the strong dependence of most modern biology on the physical sciences and mathematics. It treats biology as a unified subject based on common principles and qualities expressed in diverse ways by different organisms. The Major program is not primarily regarded as professional preparation by itself, but its aim is to provide a strong base in concepts and basic facts which should be adaptable to changing demands and needs in modern society. Students enrolled for a Bachelor of Science degree with a Major in Biology must satisfy the general requirements for Science stated on p. 106 and take the following 15.0 credits in a pattern approved by the Chair.

The recommended course pattern is shown in the Chart below. It is important that students enrol in courses in the recommended sequence to ensure

Recommended Sequence of Courses for Students in Biology B.Sc. Major and Honours programs

First Year - Fall Term

Mathematics 69.107★
Biology 61.103★

First Year - Winter Term

Biology 61.104★
Mathematics 69.117★ or
Mathematics 69.257★

First Year - Fall/Winter Term

Chemistry 65.100
Physics 75.105
Arts/Social Science Option

Second Year -Fall Term

Plant Biology 61.202★
Cell Physiology 61.220★
Ecology 61.260★

Second Year - Winter Term

Animal Biology 61.201★
Genetics 61.214★
Biology Option★

Second Year - Fall/Winter Term

Non-Biology Advanced Science Option
Arts/Social Science Option

Third Year -Fall Term

Animal Physiology 61.335★
/or Biology Option★
Biology Option★

Third Year -Winter Term

Biology Option★
Plant Physiology 61.325★
/ or Biology Option★

Third Year -Fall/Winter Term

Non-Biology Advanced Science Option
Science Option
Free Option

that subsequent prerequisites are met. The program can be summarized as follows:

1. 6.0 Biology credits to include Biology 61.103★ and 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, one of 61.325★ or 61.335★, 2.0 credits advanced Biology options;
2. Chemistry 65.100, Physics 75.105, or Physics 75.101★ and 75.102★, Mathematics 69.107★ and either 69.117★ or 69.257★ or equivalent;
3. 2.0 additional Science credits above the 100-level and not in Biology;
4. 1.0 additional Science credit;
5. 2.0 approved credits offered by the Faculties of Arts or Social Sciences;
6. 1.0 free-option credit.

B.A. Programs in Biology

The Department of Biology also offers Honours and Pass B.A. degrees in Biology alone or combined with other programs in the Faculties of Arts and Social Sciences. The B.A. in Biology places less emphasis on support from the physical sciences, but allows students to relate their special knowledge of biology to other disciplines in the social sciences or humanities in a three-year program. The four-year Honours program allows the development of particular interests in depth and initiates the student into research in the field, laboratory or library. Generally, the Honours degree is a prerequisite for admission to graduate programs and is an advantage for those planning a professional career in teaching or administration in biology, including the health sciences, agriculture and environmental science.

The Combined Honours and Pass programs allow the simultaneous specialization in Biology and one of the humanities or social sciences. Because of the social and cultural impact of science and technology, interdisciplinary combinations such as Biology and Economics, Geography, History, Journalism, Law, Mathematics, Philosophy, Political Science, Psychology, Religion or Sociology-Anthropology should better qualify one to grapple with futurology and demography, biogeography and the environment, legal implications of pollution and biomedical engineering, science policy, comparative psychology, social evolution, and the historical, philosophical and spiritual implications of current biological knowledge.

It is desirable to enter an Honours program as soon after First year as possible, to ensure that the sequence of selected courses will conform to degree requirements. (See p. 75.) Students pursuing the programs must arrange their courses in consultation with the Chair or Program Adviser of the department or departments according to one of the patterns outlined below.

See p. 151 for further details and complete information on programs and courses offered by the Department of Biology.

Students are strongly advised to register in Chemistry 65.100 in their First year providing they have the OAC, or equivalent, in Chemistry. Students entering

without the OAC in Chemistry, or equivalent, should register in Chemistry 65.010 in their First year and Chemistry 65.100 in their Second year. This early registration in Chemistry is emphasized because of the requirement of Chemistry 65.100 as a prerequisite for Biology 61.220★.

B.A. (Honours) Program

20.0 credits to include:

1. 7.0 Biology credits to include: Biology 61.103★ and 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, one of 61.325★ or 61.335★, one of 61.391★, 61.392★ or 61.393★, 1.0 400-level credit, 61.497 or 61.498;
2. Chemistry 65.100;
3. 2.0 additional Science credits not in Biology, including one above the 100-level;
4. 6.0 credits offered by either Faculties of Arts or Social Sciences to include at least three offered by one department and at least two at the 200-level or above;
5. 2.0 300- or 400-level credits approved by a Biology faculty member working in the student's area of specialization;
6. 2.0 free-option credits.

B.A. Combined Honours Program

20.0 credits to include:

1. 6.0 Biology credits: Biology 61.103★, 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, one of 61.391★, 61.392★ or 61.393★, 2.0 option credits (at least one at the 400-level);
2. Chemistry 65.100;
3. 2.0 additional Science credits not in Biology, including one above the 100-level;
4. 7.0 to 9.0 credits selected from those offered by the Faculties of Arts or Social Sciences, to include the requirement for a Combined Honours in another department, usually at least 6.0 credits;
5. An Honours project (Biology 61.497 or 61.498, or equivalent from the student's other Honours department);
6. 1.0 to 3.0 free-option credits (depending upon the requirements for 4).

B.A. (Pass) Program

15.0 credits to include:

1. 6.0 Biology credits: Biology 61.103★ and 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, one of 61.391★, 61.392★ or 61.393★, 2.0 option credits.
2. Chemistry 65.100;
3. 1.0 additional Science credit not in Biology;
4. At least 3.0 credits from any one department in either the Faculties of Arts or Social Sciences and 1.0 additional credit from any department in either of the Faculties of Arts or Social Sciences;
5. 3.0 free-option credits, one of which must be at the 200-level or above.

B.A. Combined Pass Program

15.0 credits to include:

1. 5.0 Biology credits: Biology 61.103★, 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, one of 61.391★, 61.392★ or 61.393★, one option credit;
2. Chemistry 65.100;
3. 1.0 additional Science credit not in Biology;
4. The requirement for a Combined Pass program in either of the Faculties of Arts or Social Sciences;
5. 3.0 or 4.0 free-option credits (depending on the requirements for 4).

Notes on Programs

1. Students who have completed a credit for either Biology 61.100, 61.101 or 61.102, or the combination of 61.209★ with 61.230★, will be able to use this credit to replace Biology 61.103★ and 61.104★.

Students who have completed only Biology 61.230★, will be able to replace Biology 61.103★.

Students who have completed only Biology 61.209★, must take Biology 61.103★ and 61.104★ before taking advanced Biology courses with laboratories. Biology 61.209★ will then be credited as a Biology elective.

Students who have completed Biology 61.102 and 61.209★ (or 61.230★), will be able to replace Biology 61.103★, 61.104★ with 61.209★ (or 61.230★), plus an additional half credit Biology elective. Biology 61.102 will be credited as an 'additional science' course.

Students who have completed Biology 61.102, 61.209★ and 61.230★, will be able to replace Biology 61.103★, 61.104★ with 61.209★ and 61.230★. Biology 61.102 will be credited as an 'additional science' course.

2. It is important to take Biology 61.220★ in Second year; it is a critical prerequisite for other courses.
3. Students are strongly advised to register in Chemistry 65.100 in their First year, providing they have the OAC, or equivalent, in Chemistry. Students entering without the OAC Chemistry, or equivalent, should register in Chemistry 65.010 in their First year and Chemistry 65.100 no later than their Second year. This early registration in Chemistry is emphasized because Chemistry 65.100 is a prerequisite for Biology 61.220★.
4. Students who have taken Mathematics 69.106★ (no longer offered) may use it as a free option or a 100-level Science option.
5. It is recommended that students obtain advice from the Chair on which Mathematics option (69.117★ or 69.257★) is best suited to their future plans.
6. In choosing additional Science courses above the 100-level and not in Biology, students may select from the Science Continuation courses listed on p. 110. In their selections, recent Biology students have favoured Biochemistry 63.310, 63.305★, 63.401★,

63.402★, 63.403★, 63.404★; Chemistry 65.210, 65.220, 65.321★, 65.322★; Geology 67.233★, 67.234★; Mathematics 69.250, 69.257★; Computer Science 95.103★; Geography 45.210; Psychology 49.220★, 49.221★, 49.270★. In addition, Mathematics 69.207★, 69.208★, Physics 75.291★, 75.292★ are suggested for some students.

7. Biology Major and Honours students (except students in the B.A., B.A. Combined Major, B.A. Honours and B.A. Combined Honours programs) may use Technology, Society, Environment 59.300, 59.401★ or 59.402★ in fulfilling the degree requirements, but only as a free option.

Graduate Program

The Department of Biology offers programs of study and research leading to M.Sc. and Ph.D. degrees in molecular and cellular biology, microbiology, plant and animal physiology, ecology and systematics. Details will be found in the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Notes:

More detailed information regarding Biology courses taken in Second and later years, and topics for Honours research projects (61.498), may be obtained from *Outlines of Advanced Biology and Biochemistry courses to be offered in the Fall/Winter Session 1996-1997 and Suggested Topics for Biology 61.498 Research Projects 1996-97*. These information booklets may be obtained from the Departmental Administrative Officer or from the Biology Office. All students are strongly advised to consult these information booklets when planning their future course patterns.

Students should note that Biology 61.103★ and 61.104★ are intended primarily for students wishing to major in Biology or take a Science degree. Other students who wish to take a single Biology course should consider Biology 61.192★ and/or 61.216★.

Biology 61.103★

Introductory Biology I

A lecture and laboratory course focusing on the cell. The course emphasizes the organization of cells, cellular metabolism, classical and molecular genetics and the reproduction of cells and organisms. Precludes additional credit for Biology 61.100, 61.102, or the combination of 61.209★ and 61.230★ (courses no longer offered).

Prerequisite: OAC Biology (or equivalent), or OAC Chemistry (or equivalent), or Chemistry 65.010. Lectures three hours a week, laboratory three hours a week.

Biology 61.104★**Introductory Biology II**

A lecture and laboratory course focusing on organisms and populations. The course emphasizes diversity of life forms, evolution and ecology.

Precludes additional credit for Biology 61.100, 61.102, or the combination of 61.209★ and 61.230★ (courses no longer offered).

Prerequisite: Biology 61.103★ or equivalent.

Lectures three hours week, laboratory three hours a week.

Biology 61.192★**Natural History**

A course designed primarily for students in non-Biology programs to investigate the natural history of plants and animals, and the communities in which they occur. Particular attention is paid to the Ottawa region, but appropriate examples from other locales are also included.

This course is acceptable only as a Free Elective in all Science programs and B.A. Biology programs.

Lectures three hours a week.

Biology 61.201★**Animals: Form and Function**

An investigation of invertebrates and vertebrates to relate their structure, function, behaviour and interactions with plants.

Precludes additional credit for Biology 61.200 (no longer offered).

Prerequisites: Biology 61.103★ and 61.104★ or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

Biology 61.202★**Plants: Form and Function**

An introduction to the structure and development of higher plants (at molecular, cellular and organism levels) discussed in relation to their function.

Precludes additional credit for Biology 61.200 (no longer offered).

Prerequisites: Biology 61.103★ and 61.104★ or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

Biology 61.214★**Introductory Genetics**

A lecture and laboratory course on the mechanisms of inheritance and the nature of gene structure, composition and function. It introduces both classical Mendelian genetics and modern molecular genetics. Precludes additional credit for Biology 61.215 (no longer offered). Credit for Biology 61.216★ will not be given if it is taken after Biology 61.214★.

Prerequisites: Biology 61.103★ and 61.104★ or permission of the Department.

Lectures three hours a week, laboratory four hours a week. It is strongly recommended that this course be taken by Biology Majors in their Second year of study (see Chart, p. 153).

Biology 61.216★**Human Genetics and Evolution**

A course designed for non-Science Majors which develops the central concepts of genetics and evolution, using, wherever possible, examples drawn from

studies of humans. Topics covered include: human reproduction and cell division; chromosomes; autosomal inheritance; sex and sex-linked inheritance; molecular basis of genes and gene function; mutation; genetic diseases; genetic engineering; genes, environment and behaviour; genes in populations; mechanisms of evolution; race; human evolution.

Not a Science continuation course. Available to students in a Biology or other Science program only as free elective, but credit will not be given for Biology 61.216★ if taken after 61.214★ or 61.215 (no longer offered).

Prerequisite: A general biology course at the OAC level or equivalent.

Lectures three hours a week.

Biology 61.220★**Cell Physiology and Biochemistry**

A lecture and laboratory course on cellular functions and their inter-relationships. It introduces topics including thermodynamics, membrane structure and function, transport mechanisms, basic metabolic pathways, energy production and utilization, communications between cells. (Listed as Biochemistry 63.220★ for students enrolled in the Biochemistry and Biochemistry/Biotechnology programs.)

Prerequisites: Biology 61.103★ and 61.104★, Chemistry 65.100 or permission of the Department. Lectures three hours a week, laboratory four hours a week. It is strongly recommended that this course be taken by Biology Majors and Honours students in their Second year of study. (See Chart, p. 153.)

Biology 61.260★**Introduction to Ecology**

A lecture and laboratory course providing an overview of the role of the physical and biotic environment in determining the distribution, abundance and evolution of organisms. The course emphasizes the basic ideas shaping ecology and how these allow us to understand our impact on the environment. The laboratory includes field work and computer assignments. Precludes additional credit for Biology 61.360★ and 61.261★ (both no longer offered).

Prerequisites: Biology 61.103★ and 61.104★ or 61.100 (no longer offered), or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

Biology 61.305★**Invertebrate Zoology**

A course devoted to the study of invertebrate structure, physiology, ecology and behaviour.

Prerequisite: Biology 61.201★. Note: This course is a prerequisite for Biology 61.405.

Lectures two hours a week, laboratory four hours a week.

Biology 61.311★**Mycology**

The morphology, evolution and biological importance of the fungi.

Prerequisites: Biology 61.103★ and 61.104★.

Lectures two hours a week, laboratory four hours a week.

Biology 61.314★**Molecular Genetics**

A lecture course dealing with modern advances in molecular genetics.

Precludes additional credit for Biology 61.215 (no longer offered).

Prerequisite: Biology 61.214★ or permission of the Department.

Lectures three hours a week.

Biology 61.321★**Cell Biology**

A lecture and laboratory course on the structure, composition, function and development of eukaryotic cells and their organelles.

Precludes additional credit for Biology 61.221★ (no longer offered).

Prerequisites: Biology 61.214★, 61.220★, 61.314★ (which may be taken concurrently); or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

Biology 61.325★**Plant Biochemistry and Physiology**

A lecture and laboratory course consisting of selected topics in metabolism and physiology of plants, including photosynthesis, nutrient uptake and transport, intermediary and secondary metabolism, germination, growth and development.

Prerequisites: Biology 61.202★ and either Biology 61.220★ or Chemistry 65.220; or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

Biology 61.331★**Microbiology**

The biology of the Bacteria and Archaea from the molecular and cellular level to their involvement in ecological, medical and industrial processes. Emphasis is placed on understanding these organisms and their activities in terms of their genetics and physiology, and their capacity for rapid evolution.

Precludes additional credit for Biology 61.330★ (no longer offered).

Prerequisites: Biology 61.103★ and 61.104★ and either Biology 61.220★ or Biochemistry 63.310 (the latter may be taken concurrently). It is strongly recommended that students registering in the course have a knowledge of basic molecular genetics at the level of Biology 61.314★ (which may be taken concurrently).

Lectures three hours a week, laboratory four hours a week.

Biology 61.335★**Animal Physiology**

The properties of physiological systems and components of animals with emphasis on their physico-chemical bases.

Prerequisites: Biology 61.220★ or Chemistry 65.210. Physics 75.105, or 75.101★ and 75.102★ and Mathematics 69.107★ and 69.117★ or 69.257★ are strongly recommended.

Lectures three hours a week, laboratory four hours a week.

Biology 61.351★**The Biophysics of Animal Movement**

A biophysical treatment of various types of animal motion. Topics covered include the properties of muscles, tendons, bones, joints and the co-ordinated use of these structures. Human locomotion and fitness, bird flight, especially the soaring of the vulture and the albatross, and animal migration are discussed in detail.

Prerequisites: Biology 61.220★ or Chemistry 65.210 and Physics 75.105 or, 75.101★ and 75.102★ or permission of the Department.

Lectures three hours a week, tutorial or seminar one hour a week.

Biology 61.361★**Analytical and Experimental Ecology**

A course utilizing the concepts presented in Biology 61.260★ and selected ecological experiments to analyze ecosystem types and the major factors that characterize them.

Prerequisite: Biology 61.260★.

Lectures three hours a week, laboratory four hours a week.

Biology 61.362★**Conservation Biology**

Habitat changes related to fragmentation and other disturbances and impacts are analyzed in terms of effects on demographics and genetics of species and in terms of effects on species diversity and extinction risks. Conservation planning applied to municipal regions, parks, and reserves are analyzed as responses to risks to species and ecological systems. Case study workshops guide formulation of recommended ecological solutions to a selected set of topical Canadian conservation problems.

Prerequisite: Biology 61.260★ or permission of the Department.

Lectures three hours a week and laboratory/workshop three hours a week.

Biology 61.364★**Analysis of Ecological Relationships**

This course is an introduction to the analysis of ecological data. Students conduct analyses of datasets in weekly four-hour computer laboratory sessions. Emphasis is on ways of dealing with the following general characteristics of ecological data: (i) high degree of variability, (ii) high degree of spatial contagion in ecological populations and variables, and (iii) highly dynamic nature of ecological populations and variables. Methods introduced in the course include simple statistics, spatial statistics, time series analysis, correlation analysis, regression analysis and others.

Prerequisites: Biology 61.260★ and Mathematics 69.257★. For students in the Environmental Engineering program, Biology 61.103★ and 61.104★, Engineering 81.302★, and Mathematics 69.352★, which may be taken concurrently.

Workshops four hours a week.

Biology 61.365★**Field Course I****Biology 61.366★****Field Course II**

The above half-credit Field Courses provide students

with an opportunity for intensive, continuous study of living organisms under natural conditions. Credit for each course is based on two weeks of full-time field work with attendant assignments, selected from several one- or two-week modules with various instructors. Course modules offered each year usually range geographically from Ontario to the arctic and the tropics and include modules that focus on terrestrial, freshwater and marine ecosystems. Costs of long-distance transportation (if applicable), room and board relating to the courses are borne by the student. Module topics are listed by the Co-ordinator each January and students reserve their choice of modules with the Co-ordinator at that time. Formal registration is made in the Fall or Winter term following completion of the module. (Biology 61.365★ Field Course I, is also listed as Psychology 49.323★, for animal behaviour modules only.)

Only 0.5 credit may be obtained from 61.365★ and only 0.5 credit from 61.366★, but neither course can be used for the purpose of repeating a particular module.

Prerequisites: At least one course in Biology beyond the 100-level and written permission of the Department.

All day, approximately six days a week.

Biology 61.370

The Flora and Fauna of Canada

An introduction to Canadian vascular plants, vertebrates, insects and biogeographic regions through laboratory and field study of representative Canadian organisms, with emphasis on local forms. The small collections of vascular plants and insects required are best made during the summer before the course is taken. Detailed instructions must be obtained from the instructor.

Prerequisites: Biology 61.201★ and 61.202★, or 61.192★ and permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.381★

Plants and Herbivores

This course explores the chemical, physiological, ecological and evolutionary interactions that underlie the relationship between plants and their insect herbivores.

Prerequisites: Biology 61.201★ and 61.202★.

Lectures/seminars three hours a week.

Biology 61.391★

Biology in Society

A seminar half-credit course dealing with selected areas of biological knowledge with direct relevance to social activities of man. Not available as a continuing Science course for students other than Biology Majors except with permission of the student's Major department.

Prerequisites: Biology 61.201★ and 61.202★, 61.214★ or permission of the Department.

Lectures/seminars/discussions, three hours a week.

Biology 61.392★

Biologists in Canada

A lecture/seminar half-credit in which the contributions of selected biological and medical scientists to Canadian society are assessed individually and collectively. The emphasis is biographical and involves

intensive student participation.

Prerequisites: A 200-level Biology course other than Biology 61.209★ and 61.230★ or permission of the Department.

Seminar and discussion, three hours a week.

Biology 61.393★

Biology and Development of Renewable Resources

A lecture/seminar half-credit course for senior students in the Faculties of Arts and Social Sciences. Emphasis is placed on the role that biology and agriculture play in economic, technical, political and social development in Canada and in the Third World. Not a Science continuation course. Available only as a free elective in B. Sc. programs. Available as a Biology option in Biology B.A. programs.

Prerequisites: Third-year standing and co-registration in advanced courses in the student's Major or permission of the Department.

Lectures three hours a week.

Biology 61.405

Invertebrate Zoology

An advanced course on the classification, morphology, ecology and evolution of invertebrate animals. **Prerequisite:** Biology 61.305★ or permission of the Department.

Lectures three hours a week, laboratory four hours a week.

Biology 61.408★

Plant Development

A lecture course dealing with recent advances in our understanding of plant development.

Precludes additional credit for Biology 61.410 (no longer offered).

Prerequisite: Biology 61.202★ or permission of the Department.

Lectures and seminars, three hours a week.

Biology 61.409★

Techniques for the Experimental Study of Plant Structure

A practical course in which students have the opportunity to learn and evaluate modern techniques used in the study of plant structure by optical microscopy. Precludes additional credit for Biology 61.410 (no longer offered).

Prerequisite: Biology 61.202★ or permission of the Department.

Laboratory five hours a week.

Biology 61.413★

Population Genetics

Basic ideas of population structure, equilibrium, selection mutation, genetic drift.

Precludes additional credit for Biology 61.418 (no longer offered).

Prerequisite: Biology 61.214★ or permission of the Department. A course in statistics is highly recommended.

Lectures and seminars three hours a week.

Biology 61.414★

Evolutionary Genetics

A continuation of Biology 61.413★ dealing with molecular evidence of evolution, speciation as well as the analysis of biometrical traits.

Precludes additional credit for Biology 61.418 (no longer offered).

Prerequisite: Biology 61.413★ or permission of the Department. A course in statistics is highly recommended.

Lectures and seminars three hours a week.

Biology 61.415

Chordate Zoology

An advanced course on the classification, geographic distribution and evolution of the major groups of chordates. As part of the practical work, each student must make a small collection of specimens of chordates, preferably during the summer before the course is taken. Detailed directions may be obtained from the instructor.

Prerequisite: Biology 61.201★ or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.416★

Methods in Molecular Genetics

The scope and purpose of the course is to review the use of innovative genetic manipulation techniques for the successful solution of problems in molecular biology. The course is suitable for students with a developing interest in problems of molecular and cellular biology and biochemistry.

Precludes additional credit for Biology 61.417 (no longer offered).

Prerequisites: Biology 61.214★ and 61.314★ or 61.215 (no longer offered) and 61.331★ or equivalent and a course in Biochemistry or permission of the Department.

Lectures two hours a week.

Biology 61.419★

Laboratory Techniques in Molecular Genetics

This laboratory course is complementary to Biology 61.416★. It is designed to give the student some practical familiarity with methodology in molecular genetic techniques. The laboratory is suitable for students with a developing interest in problems of molecular and cellular biology and biochemistry.

Precludes additional credit for Biology 61.417 (no longer offered).

Prerequisites: Biology 61.331★ and 61.416★ or equivalent and a course in Biochemistry or permission of the Department. Enrolment limited.

Lecture/laboratory six hours a week in two sessions.

Biology 61.421★

Cell Biology

An advanced course dealing with the current state of knowledge of the structure, molecular organization, reproduction and functions of eukaryotic cells and their organelles.

Precludes additional credit for Biology 61.424 (no longer offered).

Prerequisites: Biology 61.221★ (no longer offered) or 61.321★ and either Biochemistry 63.310 or Biology 61.314★, or permission of the Department.

Lectures and seminars three hours a week.

Biology 61.424★

Plant Physiological Ecology

Physiological mechanisms for the acquisition of carbon, water and nutrients and how those resources are

distributed in plants adapted to a variety of environments. Particular emphasis is placed on mechanisms for acclimation/adaptation to environmental variation. Major topics include: (i) Photosynthesis, carbon isotope discrimination; (ii) Water relations, hydraulic architecture, energy budgets; (iii) Nutrient uptake and requirements, nitrogen fixation; (iv) Micrometeorology, methods for the description and analysis of physical conditions above ground and in the soil. Prerequisites: Biology 61.202★, Biology 61.325★, or permission of the Department.

Lectures and seminars three hours a week.

Biology 61.426★

Advanced Plant Biochemistry

A lecture and seminar course dealing with recent developments in selected areas of plant biochemistry.

Prerequisites: Biology 61.325★ and Chemistry 65.220 or permission of the Department.

Biology 61.429★

Advanced Plant Physiology

An advanced course dealing with recent developments in selected topics of plant physiology.

Precludes additional credit for Biology 61.425 (no longer offered).

Prerequisites: Biology 61.325★ and Chemistry 65.220 or permission of the Department.

Lectures/discussion three hours a week.

Biology 61.430★

Topics in Applied Environmental Microbiology

Environmental microbiology examines ecological interactions within microbial communities and between micro-organisms and their biotic and abiotic environments. This course illustrates recent applications of such studies to the development of microbial processes of practical importance, such as treatment of wastes and pollutants, insect control, nitrogen fixation and production of foods, pharmaceuticals, fuels and other chemicals.

Prerequisites: Biology 61.331★, Biochemistry 63.310 or permission of the Department.

Lectures and seminars two hours a week.

Biology 61.431★

Current Topics in Biotechnology

A lecture/seminar course that explores current usage and some practical problems of the industrial and technological exploitation of biological systems. Opportunity is provided for visits to operating production and research facilities.

Prerequisites: Biology 61.215, (or 61.214★ and 61.314★), 61.331★ or Biochemistry 63.310 or permission of the Department.

Lectures and seminars, two hours a week.

Biology 61.432★

In vitro Manipulation of Animal Cells

A lecture and laboratory course on the theory and practice of animal cell culture. The following topics are emphasized: sterile technique; medium composition and growth regulation; the immune system and principles of the immune response; production, screening and application of polyclonal and monoclonal antibodies.

Prerequisite: Biology 61.221★ (no longer offered) 61.321★ or equivalent, or permission of the Department. Enrolment limited.
Lectures two hours a week, laboratory four hours a week.

Biology 61.433★
Plant Cell and Tissue Culture

A course dealing with the theory and practice of plant cell and tissue culture and *in vitro* regeneration from protoplasts, tissue explants and excised germinal tissue. The course examines the usefulness of these techniques in plant biotechnology for the production of transformed cultivars of agronomic and pharmaceutical importance.

Prerequisites: Biology 61.325★ and 61.221★ (no longer offered) or 61.321★ or permission of the Department. Enrolment limited.

Lectures two hours a week, laboratory four hours a week.

Biology 61.435
Animal Physiology

A course dealing in some detail with advances made in particular areas of animal physiology, (1995-96: neurophysiology).

Prerequisites: Biology 61.335★, Chemistry 65.220 and Physics 75.105, or 75.101★ and 75.102★, or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.460
Insect Evolution

A lecture and laboratory course on the morphology and evolution of the more important structures and order of insects. Topics will include insect reproduction, embryology, endocrinology, moulting and metamorphosis. This course is complementary to Biology 61.461, which is offered in alternate years.

Prerequisite: Biology 61.201★ or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.461
Principles of Systematic Entomology

A lecture and laboratory course devoted to the study of identification of insects, the principles of theoretical taxonomy, some aspects of insect behaviour and control measures. Instructions and equipment for the required insect collection can be obtained from the instructor in the spring prior to the course. This course is complementary to Biology 61.460, which is offered in alternate years.

Prerequisite: Permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.469★
Evolutionary Concepts

Evolution as related to gene pools, isolation, speciation, natural selection, competition, dominance, and distributional patterns; examples from North American biota are emphasized.

Prerequisites: Biology 61.260★ or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.471★
Evolution and Biogeography

A continuation of concepts developed in Biology 61.469★ and applied to world biotic patterns. Community evolution, tropical diversity and temporal stability are considered.

Prerequisite: Biology 61.469★ or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.475
History of Biology

A seminar course on the history of biology and biological theory.

Prerequisites: Biology 61.214★, a course in physiology at least concurrently, and permission of the Department.

Biology 61.481★
Animal Behaviour

An advanced half-credit course in the study of animal behaviour. Topics such as predator-prey interactions, mating behaviour, migration, mother-young interactions, social behaviour and inter- and intra-specific spacing behaviour are interpreted in an ecological context. Lectures, seminars and laboratories are used to achieve this coverage.

Prerequisites: Biology 61.201★, and 61.260★ (may be taken concurrently), or permission of the Department.

Lectures two hours a week, laboratory four hours a week.

Biology 61.490
Directed Special Studies and Seminar
Permission of the Department.

Biology 61.491★
Directed Special Studies
Permission of the Department.

The Directed Special Studies are courses for either individual or group study, open to all Third- and Fourth-Year undergraduate students who wish to explore a particular topic of interest. Course work may include directed reading, written assignments, tutorials, laboratory or field work. Prior to registration the student must have the approval of a Faculty instructor, who will act as the supervisor, and permission of the Department. Students normally may not offer more than a total of 1.0 credit of Directed Special Studies in their program.

Biology 61.497
Independent Study

A course for independent research and study from library sources, under the supervision of a member of the Department, open only to students in the Honours B.A. programs. A major paper reporting the research must be submitted to the supervisor by April 1 of the Fall/Winter session or August 15 of the Summer session, and the student will be examined orally on the topic of the paper by a panel of three faculty members.

Precludes additional credit for Biology 61.498.

Biology 61.498

Research Project

Fourth-year B.Sc. Honours students must carry out a research project under the supervision of a member of the Department. Fourth year B.A. Honours students may take Biology 61.498 if they demonstrate to the Chair that they have adequate experience in the laboratory. Approval of the topic and research schedule must be obtained from the Supervisor and Chair before the last day for late registration of either the Fall/Winter or Summer sessions. Each student's performance is examined by a faculty committee after the completion of the project. 70 percent of the grade is awarded by the supervisor based on the completed research report, and the student's performance in the project. 30 percent of the grade is awarded by the supervisor and two advisers based on the report and the student's performance in an oral examination on the report. The written report must be submitted by the last day for submission of course assignments. Extensions of the deadline will be allowed only at the discretion of the Chair of the Department.

Precludes additional credit for Biology 61.497.

(Science)

583 Tory Building
Telephone: 520-3889
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Academic Administration

Biotechnology Co-ordinators

Biology: J.A. Webb
Biochemistry: P.H. Buist

General Information

Biotechnology is concerned with the design, modification and controlled use of living organisms and their metabolic systems to carry out a wide range of useful processes in agriculture, manufacturing and service industries. This is an important and growing field for the application of biological studies to industrial, commercial, agricultural and environmental problems. Important areas include fermentation and enzyme technology, genetic engineering and other cellular manipulations.

Biotechnology at Carleton

A number of scientists at Carleton carry out research in topics related to biotechnology. Some areas currently under investigation include:
metabolic engineering and applied microbiology;
genetic engineering;
natural products for biological control;
cell and tissue culture technology.

By completing a particular pattern of options in Biology or Biochemistry, undergraduates interested in careers in this expanding area can qualify for an Honours B.Sc. in Biology and Biotechnology, or in Biochemistry and Biotechnology. These programs provide the basic grounding in biology and chemistry, yet allow inclusion of specialized courses related to biotechnology. The biology version allows for more emphasis at the cell and organizational level, while the biochemistry version has a greater concentration at the molecular level. One of the requirements is completion of an Honours research project in a topic related to current studies in biotechnology. In special cases, students may carry out the project in a local laboratory outside of the University, with joint supervision by a faculty member and an outside scientist. When possible, special courses will be offered in subjects of direct application in biotechnology.

Courses required for the Biotechnology designation (in addition to other program requirements) include: Organic Chemistry (Chemistry 65.220), General and Industrial Biochemistry (Biochemistry 63.305★, 63.310, 63.404★), Cytology (Biology 61.321★), Microbiology (Biology 61.331★), Molecular Genetics and/or Cell Biology (selected from Biology 61.416★, 61.419★, 61.421★, 61.432★, 61.433★) and Biotechnology (Biology 61.430★ or 61.431★).

For information on course patterns for students entering these programs with, or without, the OAC in

Biology should refer to p.155 for complete information.

Honours in Biology and Biotechnology

Course requirements are 20.0 credits, in a pattern approved by the appropriate Biotechnology Co-ordinator:

1. 8.0 Biology credits: Biology 61.103★ and 61.104★, 61.201★, 61.202★, 61.214★, 61.220★, 61.314★, 61.321★, either 61.325★ or 61.335★, 61.331★, one of 61.430★ or 61.431★; 1.0 credit from 61.416★, 61.419★, 61.421★, 61.432★ or 61.433★; 1.0 credit Biology option.
2. 2.0 Biochemistry credits: Biochemistry 63.310, 63.305★, 63.404★.
3. 2.0 Chemistry credits: Chemistry 65.100 and 65.220.
4. 1.0 Physics credit: Physics 75.105, or 75.101★ and 75.102★.
5. 1.5 Mathematics credits: Mathematics 69.107★, 69.117★, 69.257★.
6. 1.5 credits to be chosen from Biology 61.416★, 61.419★, 61.421★, 61.430★, 61.431★, 61.432★, 61.433★; Biochemistry 63.401★, 63.402★, Chemistry 65.210, 65.370★, Technology, Society, Environment 59.401★, and 59.402★. In special cases, other advanced Science courses may be approved by the Biotechnology Co-ordinator.
7. 2.0 approved credits offered by the Faculties of Arts or Social Sciences.
8. 1.0 free option credit.
9. A research project (Biology 61.498) in an area approved by the Biotechnology Co-ordinator.

Honours in Biochemistry and Biotechnology

Course requirements are 20.0 credits, in a pattern approved by the appropriate Biotechnology Co-ordinator:

1. 4.5 Biology credits: 61.103★ and 61.104★ or equivalent, 61.214★, 61.314★, 61.321★, 61.331★, either 61.325★ or 61.335★, and 1.0 credit from 61.416★, 61.419★, 61.421★, 61.430★, 61.431★, 61.432★ and 61.433★.
2. 4.5 Biochemistry credits: 63.220★ or equivalent, 63.305★, 63.310, 63.401★, 63.402★, 63.404★ and 63.498.
3. 4.5 Chemistry credits: 65.100, 65.210, 65.220, 65.231★, 65.321★, and either 65.322★ or 65.325★.
4. 1.0 Physics credit: 75.101★ and 75.102★, or 75.105.
5. 1.0 Mathematics credit: 69.107★, 69.117★.
6. 1.0 credit chosen from Biochemistry 63.403★, either of Biology 61.201★ or 61.202★, Biology 61.325★, 61.335★, 61.416★, 61.419★, 61.421★, 61.426★, 61.429★, 61.430★, 61.431★, 61.432★, 61.433★, Chemistry 65.322★, 65.325★, 65.370★, 65.380★. In special cases, other advanced Science courses may be approved by the Director.

7. 2.0 approved credits offered by the Faculties of Arts or Social Sciences.

8. 1.0 free-option credit or 0.5 credit if Biology 61.102 (no longer offered) is taken in lieu of the OAC in Biology.

9. 0.5 credit in a Science Continuation Course.

Notes on Programs

1. In the Biology/Biotechnology program, "Honours Subjects" used for calculation of Honours GPAs include all courses taken in Biology and Biochemistry.

2. In the Biochemistry/Biotechnology program, "Honours Subjects" used for calculation of Honours GPAs include all courses taken in Biochemistry, plus the Biology and Chemistry courses fulfilling requirements 1, 3 and 6 above.

3. In choosing a program, students should consider the prerequisites for any courses that they may wish to take in later years; in particular some options listed in requirements 1 and 6, above, may be offered only in alternate years and may require as prerequisites for one or other of Biology 61.325★ and 61.335★. Because of timetable constraints students may have to take Chemistry 65.210 and Biology 61.201★ or 61.202★ in different years.

4. Credit will not be given for Biology 61.220★ or Biochemistry 63.220★ taken after Biochemistry 63.310 or equivalent.

5. A completed credit for Biology 61.100, 61.102 or 61.209★ and 61.230★ may replace the requirement for Biology 61.103★ and 61.104★. Students who have completed only Biology 61.230★ may replace 61.103★ with 61.230★. Students who have completed only 61.209★ must pass 61.103★ and 61.104★; Biology 61.209★ may then be credited as a Biology elective.

Typical Course Patterns

Biology and Biotechnology

First Year

Biology 61.103★ and 61.104★;

Chemistry 65.100;

Physics 75.105, or 75.101★ and 75.102★;

Mathematics 69.107★, 69.117★;

1.0 credit, Arts or Social Sciences option.

Second Year

Biology 61.201★, 61.202★, 61.214★, 61.220★, 61.260★, 61.331★;

Chemistry 65.220;

1.0 credit, Arts or Social Sciences option.

Third Year

Biology 61.314★, 61.321★, 61.325★, 61.335★, 0.5 Biology option;

Biochemistry 63.310 and 63.305★;

Mathematics 69.257★;

0.5 credit, free option.

Fourth Year

1.0 credit from Biology 61.416★, 61.419★, 61.421★, 61.432★, 61.433★;

1.5 advanced option credits (see 6 above);

Biochemistry 63.404★;

Biology 61.430★ or 61.431★;

Biology 61.498;

0.5 credit, free option.

Biochemistry and Biotechnology

First Year

Biology 61.103★ and 61.104★;

Chemistry 65.100;

Physics 75.101★ and 75.102★, or 75.105;

Mathematics 69.107★, 69.117★;

1.0 credit, Arts or Social Sciences option.

Second Year

Biology 61.214★, 61.321★;

Biochemistry 63.220★;

Chemistry 65.210, 65.220, 65.231★;

1.0 credit, Arts or Social Sciences option.

Third Year

Biology 61.325★ or 61.335★;

Biology 61.314★, 61.331★;

Biochemistry 63.305★, 63.310;

Chemistry 65.321★, 65.322★, or 65.325★;

1.0 credit of option.

Fourth Year

1.0 credit from Biology 61.416★, 61.419★, 61.421★, 61.430★, 61.431★, 61.432★, 61.433★;

1.5 advanced option credits (see 6 above);

Biochemistry 63.401★, 63.402★, 63.404★;

Biochemistry 63.498.

(Social Sciences)

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Academic Administration

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J. Maurice
L. Unger

Sessional Lecturers

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M. Borts

B. Cline
N. Close
J. Compeau
G. Dupont
V. Ellis
C. Giroux
S. Goldstein
D. Hall
J. Jackson
W. Kessels
C. Kirby
P. Lindfield
J. Luck
I. MacGregor
D. Miller
J. Mintz
M. Reynolds
R. Riordan
G. Schmidt
E. Schnitzer
P. Vincent
J. Wyllie

Adjunct Professors

C. Higgins
I. Kaliszewski
F. Kirk
G.R. Mallory
L. Moffat
S. Szpakowicz
A. Young

Programs of Study

The School of Business offers three degree programs: Bachelor of Commerce with Honours (see below), Bachelor of International Business with Honours (see p. 169), and Master of Management Studies (see p. 171), and the *Faculty of Graduate Studies Calendar*.

Bachelor of Commerce with Honours

The Bachelor of Commerce degree is an Honours program and candidates are required to complete a four-year program of studies.

The Commerce program is designed to provide a broad foundation in the business academic disciplines. The required courses introduce the student to the relevant academic disciplines and to the functional areas of management. All students, in consultation with the faculty of the School, may structure the balance of their program to build upon this foundation in accordance with their personal career objectives and areas of interest. Suggested options for selected areas of interest are listed below. (See *Selected Fields of Interest*.)

Students who may wish to proceed to a Master's Degree in Public Administration at Carleton University should refer to the sections entitled *M.A. in Public Administration* given below. Students interested in pursuing graduate studies in business should refer to

the section entitled *Master of Management Studies* and *Masters in Business Administration*.

Graduation Requirements

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all School regulations and requirements as set out below.

Admission Requirements

First Year

Successful completion of Qualifying-University year with an Honours Commerce GPA of 6.5 or better including Mathematics 69.007★ and 69.017★ and a CI of 6.00 or better; or

The OSSD or the equivalent with an average of 65 percent or better, including at least six OACs, one of which must be Calculus (with a grade of 60 percent or better) and one must be either Algebra and Geometry or Finite Mathematics. (Algebra and Geometry is the preferred course, and students who do not present this OAC will be required to take the equivalent course during their first year).

Although not an admission requirement, an OAC in English is strongly recommended. In the first year of entry into the Bachelor of Commerce program, all students (First or Upper years) are required to take an English placement test offered during the first week of the Fall term. The course requirement of 42.180★ may be waived based on their performance on a placement test. (A substitute English course may be required for some students.)

Students who fail to meet the standards required for entry to the Honours Commerce program may elect to take their First year in the three-year Bachelor of Arts program. The First-year program should include Business 42.101★, and 42.102★, Economics 43.100 and Mathematics 69.109★ and 69.119★. Application may then be made for admission to the Second year of the Commerce program.

Second and Subsequent Years

Applications for admission to the Second or subsequent years will be assessed on their merits. Advanced standing will be granted only for those courses that are determined to be appropriate for the Commerce program. Students must present an Honours Commerce GPA of 6.5 or better, and a CI of 6.00 or better. On admission to the Commerce program, students will not receive credit for courses graded below C-.

Course Requirements

Candidates for the Bachelor of Commerce degree must take a total of 20.0 credits.

Students with a prior university degree will receive advanced standing where appropriate. Acceptance

in the program will be governed by the standards required for entry to the Honours program; however a minimum of 7.0 additional credits will be required, following admission to the program, for the Bachelor of Commerce degree.

Students who propose to include language courses in their program must obtain prior approval from the School.

Full-time students in Second, Third and Fourth year with an Honours Commerce GPA of at least 9.0 are eligible to apply for co-operative work terms. These work terms are four months in duration and are at a junior officer level in organizations in the Ottawa-Hull area. Students on a work term may concurrently take no more than 0.5 credit course. Work terms provide students with opportunities to integrate the academic and applied aspects of management. They are neither mandatory nor guaranteed, and are not for credit. The maximum number of work terms which a student may complete in the Bachelor of Commerce program is four. Successive work terms are not permissible (any variation from this rule would require prior written approval from the School of Business). Students can only be considered for a cooperative work term if they are eligible for work in Canada. Only Canadian citizens may apply for co-operative work terms with the Public Service Commission.

Academic Standing

To continue in the Commerce Honours Program, students proceeding into the Second- or Third-year must maintain a cumulative GPA of 6.0 or better in the Honours courses (in Commerce, Honours means core or required courses). In addition, the CI must be 6.00 or better. To proceed into and continue in Fourth-year, students in Commerce must have and maintain a cumulative GPA of 6.5 or better in Honours courses. All students must also maintain a CI of 6.00 or better.

Probation is not available in the Commerce program.

The attention of students is drawn to the regulations relating to Honours on p. 78 of the Calendar.

Course Load

The normal course load for a full-time undergraduate student during the Fall/Winter session is 5.0 credits. In the Commerce program slightly more than half of these credits are obligatory. Subject to program approval, the remaining courses may be selected in the light of individual preference.

Course Selection

Required (Core) Courses

Under the course credit system there is no promotion from one year to the next after First year. The required course listings for Second year and subsequent years, then, reflect a recommended course pattern; individual students may wish to adapt the timing of

individual courses to meet their own particular needs or preferences.

First Year

Business 42.104★, Introduction to Financial Accounting
 Business 42.105★, Introduction to Management Accounting
 Business 42.142★, Programming for Business Students I.
 Economics 43.100 Introduction to Economics
 Mathematics 69.109★, Calculus: With Applications to Business and Economics, or Mathematics 69.107★ Elementary Calculus I.
 Mathematics 69.119★ Algebra: With Applications to Business and Economics, or Mathematics 69.117★ Elementary Algebra. First year Bachelor of Commerce students deficient in OAC Algebra must take Mathematics 69.017★ Algebra and Geometry as a prerequisite to 69.119★ or 69.117★.
 Psychology 49.100, Introduction to Psychology, or Sociology 53.100 Introduction to Sociology.

Second Year

Business 42.210★, Management and Organizational Behaviour
 Business 42.228★, An Introduction to Marketing
 Business 42.230★, Introduction to Management Science
 Business 42.240★, An Introduction to Information Systems.
 Business 42.250★, An Introduction to Business Finance
 Business 42.261★, Business Law I
 Economics 43.202★, Intermediate Microeconomics I
 Economics 43.212★, Intermediate Macroeconomics I
 Economics 43.220, Statistical Methods in the Social Sciences or
 Mathematics 69.266★, Business Statistics I and 69.267★ Business Statistics II

Third Year

Business 42.311★, Micro Organizational Behaviour
 Business 42.317★, Introduction to Industrial Relations
 Business 42.337★, Operations Management

Fourth Year

Business 42.461★, Business Ethics and Business 42.469★, Strategic Management and Business Policy and an additional 2.0 400-level credits of which at least 1.0 credit must be selected from courses offered by the School of Business.

Concentrations

A concentration is a structured set of courses within the Bachelor of Commerce Program which leads to an official notation of specialization within the student's degree. The School of Business plans to offer additional concentrations in response to job market and student needs. While the courses listed are

required for the specialization, the order in which they are taken needs to be planned in advance. Students are therefore advised to declare their concentration as early as possible in order to accommodate course prerequisites and fulfill all graduation requirements.

Selected Fields of Interest

The following sets out a listing of suggested options by area of interest. The courses listed are *intended to provide a general guideline only*; consultation with members of the School of Business is recommended.

Students are urged to plan in advance in order to accommodate course prerequisites and fulfil all graduation requirements.

The School of Business offers various sections of Business 42.460★, Topics in Management Studies. The course content for each section may vary from year to year. Course contents are publicized only before registration. The suggestions offered below do not include the Business 42.460★ offerings; however, students may elect to take these courses as partial fulfilment of their 400-level Business requirement. Further information on Topics in Management Studies may be obtained from the School of Business.

• Accounting

This area of study is designed for students interested in career opportunities in accounting, financial accounting and auditing, or management accounting in the private or public sectors.

Students who intend to proceed to a professional accounting qualification as a Chartered Accountant (C.A.), Certified General Accountant (C.G.A.), or Certified Management Accountant (C.M.A.), should consult one of the faculty members in accounting. Students are advised to follow core course requirements for First Year.

Second Year

Core Courses

Business 42.210★, 42.230★, 42.240★, 42.250★.
 Economics 43.202★, 43.212★;
 Economics 43.220 or Mathematics 69.266★ and 69.267★.

Option

Business 42.200.

Third Year

Core Courses

Business 42.228★, 42.261★, 42.311★, 42.317★, 42.337★.

Options

Business 42.301★, 42.308★, 42.407★
 0.5 credit from: Business 42.408★, 42.409★.

Students may select their remaining 0.5 credit from a variety of courses offered by the School of Business and other academic units. Courses that may be of interest to students who select the accounting option include: Business 42.262★, 42.342★, 42.350★.

Fourth Year

Core Courses

Business 42.461★ and 42.469★.

Options

Business 42.400★

1.5 credits from: Business 42.305★, 42.401★, 42.402★, 42.405★.

Students may select their remaining credits from a variety of courses offered by the School of Business and other academic units. Courses that may be of interest to students who select the accounting option include: Business 42.440★, 42.442★, 42.490★.

• Finance

This area of study is designed for students interested in career opportunities in corporate finance, investment management and the management of financial institutions.

Students are advised to follow the core course requirements for First and Second years. Business 42.200, Intermediate Accounting, is highly recommended.

Second Year

Option

Business 42.200

Third Year

Core Courses

Business 42.311★, 42.317★, 42.337★.

Options

Business 42.350★ and 42.352★.

2.5 credits from:

Business 42.342★, 42.348★;

Economics 43.203★, 43.213★;

Mathematics 69.353★, 69.354★;

Philosophy 32.203★.

Fourth Year

Core Courses

Business 42.461★ and 42.469★.

Options

Business 42.450★ and 42.452★.

A minimum of 1.5 credits from:

Business 42.400★, 42.435★, 42.440★, 42.442★,

42.446★, 42.453★;

Economics 43.420★.

Students may select their remaining credit from a variety of courses offered by the School of Business and other academic units. Courses that may be of interest to students who select the finance option include:

Business 42.305★, 42.308★, 42.327★, 42.360★, 42.361★, 42.405★;

Economics 43.362★, 43.476★, 43.477★;

Law 51.321★, 51.326★, 51.341★, 51.342★, 51.422★.

• General

This area of study is designed for students interested

in career opportunities that integrate various business disciplines and for owner/managers of small and medium size business.

Students are advised to follow the core course requirements for First and Second years.

Third Year

Core Courses

Business 42.311★, 42.317★, 42.337★.

Options

Business 42.308★, 42.312★, 42.325★, 42.360★, 42.361★.

Students may select their remaining credits from a variety of courses offered by academic units other than the School of Business.

Fourth Year

Core Courses

Business 42.461★ and 42.469★.

Options

Business 42.352★, 42.413★, 42.428★, 42.440★.

Students may select their remaining 2.5 credits from a variety of courses offered by the School of Business and other academic units.

• Human Resources Management

This area of study is designed for students interested in personnel management, human resources management and management of public and private sector organizations.

Second Year

Core Courses

Business 42.210★, 42.240★, 42.250★, 42.261★;

Economics 43.202★, 43.212★;

Economics 43.220 or Mathematics 69.266★ and 69.267★.

Third Year

Core Courses

Business 42.228★, 42.230★, 42.311★, 42.317★, 42.337★.

Options

Business 42.262★, 42.312★;

2.0 credits from:

Business 42.361★;

Psychology 49.260★, 49.345★, 49.372★;

Sociology 53.346★, 53.356★, 53.370.

Fourth Year

Core Courses

Business 42.461★ and 42.469★.

Options

Business 42.413★, 42.414★, 42.415★, 42.462★;

1.0 credit from:

Economics 43.465;

Law 51.345★, 51.440★.

Students may select their remaining credits from a variety of courses offered by the School of Business and other academic units. Courses that may be of

interest to students who select the human resources management option include:

Business 42.360★, 42.440★;
Economics 43.356★;
Psychology 49.311★.

• Information Systems

The concentration in Information Systems is designed to provide a strong managerial and technical foundation for individuals wishing to pursue careers analyzing, designing, implementing and maintaining information systems. As the concentration is designed to complement and accent a core business education, students must complete all required components of the Bachelor of Commerce program including 42.142★, Programming for Business Students I and 42.240★, Introduction to Information Systems.

Students registered in the Bachelor of Commerce program may earn the Bachelor of Commerce (Information Systems) designation by completing nine half-credits in addition to the B.Comm. core. Five of these courses are specified. They are: 42.242★, 42.340★, 42.343★, 42.344★, 42.440★.

In addition, students must take at least four of the following six courses: 42.338★, 42.416★, 42.442★, 42.446★, 42.447★, 42.467★.

Advised plan of study:

First Year

Concentration Course
Business 42.242★

Second Year

Concentration Courses
None (students may take 42.242★ if they did not complete it in first year).

Third Year

Concentration Courses
Business 42.340★, 42.343★, 42.344★

Option
Business 42.338★

Fourth Year

Concentration Course
Business 42.440★

Options
Business 42.416★, 42.442★, 42.446★, 42.447★, 42.467★

• International Business

Students registered in the Bachelor of Commerce program may earn the Bachelor of Commerce (International) designation by taking 4.0 credits in the international business area. 3.0 of these credits are specified. They are:

42.354★ International Finance

42.373★ International and Comparative Management

42.374★ The Environment of International Business

42.474★ Workshop in International Management and Global Business

42.425★ International Marketing

42.469★ (I) Strategic Management and Business Policy

The remaining 1.0 credit must come from the following choices:

Economics 43.361★, Introduction to International Trade and 43.362★, International Monetary Problems; or

Political Science 47.260, International Relations (students taking this option may also wish to take 47.360★, International Institutions); or

Central/East European and Russian-Area Studies 55.405★ Environmental Problems and Politics in East/Central Europe and Eurasia and 55.406★, The Business Environment in East/Central Europe and the Soviet Successor States; or

Law 51.327★, International Economic Law: Trade and Investment and 51.328★, International Economic Law: International Regulation; or

Geography 45.329★, Sustainable Development and Third World Environments and 45.337★, Systematic Political Geography; or

Business 42.530F1, Managing The Multinational Enterprise and 42.531W1, Seminar in International Business Management (as these are graduate courses, students must have a GPA of 9.0 or better and permission of the School to enrol).

Other courses may be taken with prior permission of the School of Business.

• Management of Technology

This area of study is designed for students aspiring to become managers of technology-driven firms responsible for managing technology. The program will also be valuable for those who intend to seek careers with government departments responsible for promoting innovation activities in industries.

Second Year

Core Courses
Business 42.210★, 42.228★, 42.230★, 42.240★.
Economics 43.202★, 43.212★
Mathematics 69.266★ and 69.267★ or Economics 43.220.

Option
Political Science 47.100.

Third Year

Core Courses
Business 42.311★, 42.317★, 42.337★, 42.250★, 42.261★.

Options
2.5 credits from: Business 42.360★, 42.361★
Technology, Society, Environment Studies 59.401★,

59.402, 59.403★
Economics 43.203★, 43.213★.

Fourth Year

Core Courses

Business 42.461★ and 42.469★.

Options

Business 42.348★, 42.415★, 42.425★, 42.400★, 42.440★, 42.463★, 42.467★.

Students may select their remaining credits from a variety of courses offered by the School of Business and other academic units.

• Marketing

This area of study is designed for students interested in an international, behavioural, economic, quantitative or research approach to marketing.

Second Year

Core Courses

Business 42.210★, 42.228★, 42.240★ (or Computer Science 95.108★), 42.250★;
Economics 43.202★;
Economics 43.220 or Mathematics 69.266★ and 69.267★.

Options

1.5 credits from:

Industrial Design 85.100★ and 85.101★;
Mass Communications 27.111;
Philosophy 32.203★;
Political Science 47.100;
Psychology 49.311★;
Psychology 49.210★ or Sociology 53.210;
Sociology-Anthropology 56.220.

Third Year

Core Courses

Business 42.230★, 42.261★, 42.311★;
Economics 43.212★.

Options

Business 42.325★, 42.327★.

2.0 credits from:

Business 42.262★, 42.312★, 42.342★, 42.348★, 42.350★, 42.352★, 42.360★, 42.361★;
Economics 43.320★, 43.360★, 43.361★;
Mathematics 69.350, 69.353★, 69.354★;
Political Science 47.260;
Psychology 49.260★, 49.270★;
Sociology 53.251★, 53.254★.

Fourth Year

Core Courses

Business 42.317★, 42.337★, 42.461★ and 42.469★.

Options

Business 42.425★, 42.426, 42.428★.

A minimum of 0.5 credit from:

Business 42.413★, 42.435★, 42.440★, 42.442★, 42.446★, 42.450★, 42.452★;
Economics 43.451★;
Mathematics 70.452★, 70.453★, 70.456★.

Students may select their remaining credits from a variety of offerings. Courses that may be of interest to students who select the marketing option include:

Law 51.325★, 51.327★, 51.328★, 51.341★, 51.342★;
Political Science 47.360★;
Psychology 49.372★;
Sociology 53.345★, 53.348★, 53.351★.

• Operations Management

This area of study is recommended for students interested in production, operations research and management science. Courses in this option stress the use of quantitative methods in business.

Second Year

Core Courses

Business 42.228★, 42.230★, 42.240★ (or Computer Science 95.108★), 42.250★;
Economics 43.202★, 43.212★;
Economics 43.220 or Mathematics 69.266★ and 69.267★.

Options

Mathematics 69.207★, 69.217★.

Third Year

Core Courses

Business 42.210★, 42.337★.

Options

4.0 credits from:

Business 42.308★, 42.327★, 42.342★, 42.348★, 42.350★, 42.352★;
Economics 43.203★;
Mathematics 69.208★, 69.353★, 69.354★, 70.260.

Fourth Year

Core Courses

Business 42.261★, 42.311★, 42.317★, 42.461★ and 42.469★.

Options

A minimum of 2.5 credits from:

Business 42.435★, 42.440★, 42.442★, 42.446★, 42.450★, 42.452★;
Economics 43.476★, 43.477★.

Students may select their remaining credits from a variety of courses offered by the School of Business and other academic units. Courses that may be of interest to students who select the operations management option include:

Engineering 94.405★;
Mathematics 69.381★, 70.356★;
Philosophy 32.203★.

Bachelor of International Business with Honours

The Bachelor of International Business (B.I.B.) with Honours degree requires that candidates complete a four-year program of study.

The Bachelor of International Business Honours program is designed to provide depth in both international business studies and in a major language used in international business. In addition, courses give an exposure to social sciences which are related to international business, and a year at a foreign university provides the student with an experience-based international and intercultural point of view.

Enrolments in both the language component and in the program as a whole will be restricted based on the number of spaces available.

As this is a restricted enrolment program, the courses unique to this program are offered mainly in the Day division. Each student must spend the year before graduation and the year before his or her year abroad as a full-time student in the Day division.

Graduation Requirements

In order to graduate, students must fulfill all University graduation requirements (see p. 52) and all Faculty regulations (see p. 81), in addition to all School regulations and requirements as set out below.

Admission Requirements

The OSSD or the equivalent with an average of 65 percent or better, including at least six OACs, one of which must be either Calculus or Algebra/Geometry or Finite Mathematics. A grade of 60 percent or better is required in the mathematics course offered. If Finite Mathematics is offered, the student must also have successfully completed Grade 12 Advanced Mathematics.

Although not an admission requirement, an OAC in English is strongly recommended.

• Second or Subsequent Years

Applications for admission to Second or subsequent years will be assessed on their merits, subject to available spaces. Advanced standing will be granted only for those courses that are determined to be appropriate for the International Business program. Students who are admitted with advanced standing may have to delay the Third Year Abroad requirement until the First- and Second-year curricula are completed. Students must present an Honours International Business GPA of 6.5 or better, and a CI of 6.00 or better. On admission to the Bachelor of International Business program, students will not receive credit for courses with grades below C-.

Course Requirements

Candidates for the Bachelor of International Business Honours degree take a total of 20.0 credits.

The selection of the language to be studied must be done in consultation with the Supervisor of Honours Programs.

Academic Standing

To continue in the Bachelor of International Business Honours program, students proceeding into the Second year must maintain a GPA of 6.0 or better in the Honours courses (in International Business, Honours means core or required courses).

To proceed into and continue in Third or Fourth year, students in International Business must have and maintain a cumulative GPA of 6.5 or better in Honours B.I.B. courses. In all years, students must also maintain a CI of 6.00 or better.

There is no probation in the International Business program.

Course Load

The normal course load for a full-time undergraduate student during the Fall/Winter session is 5.0 credits.

Course Selection

The Bachelor of International Business Honours program consists of a core of 9.5 credits plus a language component of 4.0 credits in one language plus 6.5 credits of program electives of which 5.0 must be earned at a foreign university. One of the 5.0 credits taken abroad must be in the student's selected language.

Language Training Component

Students may select French, German, Italian, Japanese, Russian or Spanish as their desired language for study. Students should give both a first and second choice as their first choice may be oversubscribed. Students are also encouraged to find ways to continue their study and use of their selected language in the summers between academic years. Students interested in languages other than those listed above should contact the Supervisor of International Business Studies in case new language options are available but not yet reflected in the calendar.

All First year Bachelor of International Business Honours students must be assessed for their ability in their selected language by the relevant language department. Students with no previous experience in the selected language will take 2.0 credits in that language in their First year and 1.0 credit in each subsequent year.

Students with some ability in their selected language may be allowed to pursue studies in that language on the basis that they will effect a significant improvement in their ability. On this basis they may be permitted to take less than 2.0 credits in their selected language in First year. In that case they should substitute a higher level course or courses for which they meet the prerequisites to make up a full course

load (5.0 credits) for their First year. However, students who are truly fluent in a language may not choose that language as their language for study in this program. Students who are not required to take 2.0 credits of introductory language courses are still required to have 5.0 language credits for graduation. However, up to 2.0 of these credits may be in the form of courses in the selected language taken during the year abroad. The advice of the relevant language department will be sought in such cases.

Required (Core) Courses

The program requires that 3.0 credits in the selected language and the 7.0 credits of the First and Second year core be successfully completed before the student is eligible for the year at a foreign university.

First Year

Business 42.171★, Introduction to International Management
 Business 42.173, Quantitative Methods in Business
 Business 42.240★, Introduction to Information Systems
 Economics 43.100, Introduction to Economics

French courses for 2.0 credits as determined by the French Department; or German 22.120 (2.0 credits) Intensive Introductory German; or Italian 26.180, Intensive Italian (2.0 credits); or Japanese 23.120, Introductory Japanese (2.0 credits); or Russian 36.120, Intensive Introductory Russian (2.0 credits); or Russian 36.100, Introductory Russian and Russian 36.220, Business Russian or Spanish 38.120 (2.0 credits) Intensive Introductory Spanish.

Second Year

Business 42.270★, Basic Accounting
 Business 42.271★, Communications Practicum
 Business 42.224★, Basic Marketing
 Business 42.250★, An Introduction to Business Finance
 Political Science 47.100, Introduction to Political Science
 Economics 43.220, Statistical Methods in the Social Sciences

French 20.209, Techniques d'expression orale et écrit pour Non-Majors; or German 22.213 Written German: Analysis and Practice; or Italian 26.300, Advanced Italian; or Japanese 23.220, Intermediate Japanese; or Russian 36.201★, Spoken Russian and Russian 36.205★, Written Russian; or Russian 36.302, Advanced Russian or Spanish 38.205★ Spanish Conversation and Spanish 38.206★ Spanish Composition.

Third Year

The Third year will be spent in a foreign business school approved by the Carleton School of Business taking courses to be determined jointly by the student, the School of Business and the host School of Business. The year abroad will normally consist of the equivalent to 5.0 credits in the Carleton credit system and will normally count as 5.0 credits toward the student's degree at Carleton. The courses speci-

fied below are taken from the *Carleton University Undergraduate Calendar*. Students will take equivalent courses offered at their exchange university. Under exceptional circumstances, where the year abroad will involve an unreasonable burden, the year abroad or part thereof may be waived by the School of Business and other suitable requirements be substituted.

One of 42.240★ Business Information Systems; or 42.311★ Micro-Organizational Behaviour; or 42.317★ Industrial Relations; or 42.337★ Operations Management.

An additional 1.5 credits in Business at the 200-level or higher. International Finance is recommended.

Political Science 47.260 International Politics or Economics 43.201★ Intermediate Microeconomics for Non-Majors and Economics 43.361★ Introduction to International Trade.

1.0 credit in any subject delivered in the student's selected language.

1.0 credit in History at the 200-level or Geography, Law, Sociology, Anthropology or Women's Studies at the 100-level.

Fourth Year

Business 42.425★, International Marketing
 Business 42.463★, International and Comparative Management
 Business 42.461★, Business Ethics
 Business 42.469★, Business Policy
 One of Business 42.530★ Managing the Multinational Enterprise or Business 42.531★ Seminar in International Business Management.

French 20.331, Principes et methodes de la traduction; or 1.0 credit chosen from German 22.209★, Spoken German, German 22.301★, Advanced Spoken German, German 22.302★, Advanced Written German and German 22.403, Formal German Speech (Die deutsche Rede); or 1.0 credit chosen from Italian 26.250, Introduction to the Study of Italian Literature, Italian 26.360, Themes and Issues in Italian Culture, Italian 26.380, Writing Workshop in Italian, Italian 26.480, Translation; or Japanese 23.320, Advanced Japanese, or Russian 36.307★, Russian Syntax and Russian 36.308★, Russian Translation; or Russian 36.420★, Russian for International Relations I and Russian 36.421★, Russian for International Relations II; or Spanish 38.301★, Advanced Oral Spanish and Spanish 38.302★, Advanced Spanish Composition.

1.5 credits free elective.

Courses taken abroad and free electives are not counted in the Honours GPA calculation.

Master of Management Studies

The School of Business offers a graduate program in the field of management leading to the Master of Management Studies (M.M.S.).

The focus of the program is applied research directed toward developing productivity and innovation in Canadian business. The program of studies will develop in students the conceptual and methodological skills

required to undertake, manage and evaluate business research. It is designed to prepare students for managerial and policy roles in Canadian business. The applied research skills developed in the program are deemed to be essential if Canadian business is to be more productive and innovative in the increasingly competitive and complex world economy. The M.M.S. program requires successful completion of the equivalent of 5.0 credits. Students must complete 3.5 credits of which at least 2.5 must be at the 500-level or above and a thesis equivalent to 1.5 credits.

The areas of specialization within the program are:

Business Information Systems
Finance
International Business
Management
Marketing
Production and Operations
Research and Development Administration

M.A. in Public Administration

Students completing a Bachelor of Commerce degree program with at least High Honours standing may complete the M.A. in Public Administration offered at Carleton University in one year. Students interested in pursuing the Masters degree should take as many of the following courses as possible for their free undergraduate options:

Political Science 47.200, Canadian Government and Politics;
Law 51.456★, Administrative Law I;
Political Science 47.240, Introduction to Public Administration and Public Policy;
Political Science 47.401, Canadian Public Policy.

Master in Business Administration

Most Canadian universities offering an M.B.A. degree will grant advanced standing to applicants with a Bachelor of Commerce (Honours) degree. Students interested in pursuing an M.B.A. should select their courses in consultation with the members of the School of Business.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Some of the following courses are cross-listed from other sections of the Calendar. Business students should register in cross-listed courses under the Business number (prefix 42). In all courses with computer programming assignments, students will find it necessary to be on campus at other than the lecture periods to make use of computing facilities.

Business 42.101★

Principles of Financial Accounting

Discussion of the concepts of asset valuation and income measurement underlying the preparations and interpretation of financial statements. Precludes additional credit for Business 42.100 (no longer offered), 42.104★ and 42.270★. Lectures three hours a week.

Business 42.102★

Management Accounting

An introduction to the problems of the use of accounting data for the purposes of planning and control of operations. Precludes additional credit for Business 42.100 (no longer offered), 42.105★ and 42.270★. Prerequisite: Business 42.101★. Lectures three hours a week.

Business 42.104★

Introduction to Financial Accounting

A course open only to students registered in the Commerce program and to declared Major students in Economics. An examination of accounting methods; the primary financial statement and concepts of income determination and asset valuation. Precludes additional credit for Business 42.100 (no longer offered), 42.101★ and 42.270★. Lectures three hours a week.

Business 42.105★

Introduction to Management Accounting

A course open only to students registered in the Commerce program and to declared Major students in Economics. An examination of accounting information for management decisions. Precludes additional credit for Business 42.100 (no longer offered), 42.102★ and 42.270★. Prerequisites: Business 42.101★ or 42.104★. Lectures three hours a week.

Business 42.142★

Programming for Business Students I

A first course in computer programming, for students in Business. Introduces the basic control structures of sequence, selection, and iteration. A key focus of the course is on problem solving in the context of computer programming for Business. Both traditional structured languages and visual languages may be taught. Precludes additional credit for Engineering 91.166★ and Computer Science 95.107★. Lectures three hours a week.

Business 42.171★

Introduction to International Management

Students will be introduced to the basic concepts of managerial tasks as they occur in international business. The impact of operating in several cultures and multiple national systems on such functions as organizational structuring, planning, operations and staffing will be considered. The international context of global business will be examined. Precludes additional credit for Business 42.210★. Prerequisite: Enrolment is restricted to students in the Bachelor of International Business Honours Program. Lectures three hours a week.

Business 42.173**Quantitative Methods in Business**

This course provides students with the quantitative tools they will need for their required courses in Business and Economics. Aspects of differential and integral calculus, finite series, linear algebra, and matrix theory will be covered and used to study a variety of topics including optimization, inventory models, basic probability, decision analysis, linear programming, queueing theory, financial discounting, and project planning techniques.

Precludes additional credit for Mathematics 69.007★.

Prerequisite: Enrolment is restricted to students in the Bachelor of International Business Honours Program.

Lectures three hours a week.

Business 42.180★**Elements of English Writing**

The course is designed to improve English communication skills. Emphasis is placed on the development of one's ability to express ideas effectively by learning and practising the basic elements of the English language and composition. The course requirement of 42.180★ may be waived for some students based on their performance on a placement test (a substitute English course may be required for some students). Business students only.

Lectures three hours a week.

Business 42.201★**Intermediate Accounting I**

An examination of accounting and reporting issues related primarily to asset valuation and revenue recognition.

Precludes additional credit for Business 42.200 (no longer offered).

Prerequisites: Business 42.101★ and 42.102★; or 42.104★ and 42.105★ (with a grade of C- or better in each prerequisite).

Lectures three hours a week

Business 42.202★**Intermediate Accounting II**

An examination of accounting and reporting issues related primarily to liabilities and equities.

Precludes additional credit for Business 42.200 (no longer offered).

Prerequisite: Business 42.201★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.210★**Management and Organizational Behaviour**

The central focus of the course is the structure and management of complex organizations in an international economy. The effects of technology, environment, culture and organizational goals on the macro characteristics of structure are examined. Power, control and decision-making are discussed as examples of processes that link organizations and the individuals who work in them.

Precludes additional credit for Business 42.214★ (no longer offered).

Lectures and discussion groups three hours a week.

Business 42.224★**Basic Marketing**

A broad introduction to the basic problems and practices in marketing, for students without a background in accounting and business. Focus is on marketing strategy, planning, packaging, branding and promotion at the individual firm level. This course does not carry credit for Commerce students. Only students in Industrial Design, Honours International Business and the Management Concentration in Engineering may enrol.

Lectures three hours a week.

Business 42.228★**Introduction to Marketing**

An overview of the marketing function within the firm is sought. Promotion, product design, pricing and distribution channels are examined as key elements of the marketing mix. Consumer buyer behaviour, trends in retailing, wholesaling, sales force management and marketing research are other topics to be reviewed. Case studies are used to supplement class and reading material.

Prerequisites: Business 42.101★ and 42.102★ or 42.104★ and 42.105★, Economics 43.100 and one of Psychology 49.100 or Sociology 53.100 (with a grade of C- or better in each prerequisite).

Lectures three hours a week.

Business 42.230★**Introduction to Management Science**

Introduction to management science techniques that are routinely used as decision aids in government and industry. The course examines linear programming techniques, decision analysis and simulation. Students are introduced to quantitative models for decision making.

Precludes additional credit for Economics 43.404★, and Engineering 94.320★.

Prerequisites: Business 42.140★ or Computer Science 95.107★ or Engineering 91.166★ (with a grade of C- or better) and Mathematics 69.109★ and 69.119★ or equivalent.

Lectures three hours a week.

Business 42.240★**Introduction to Information Systems**

This course offers an introduction to the management issues associated with information systems in organizations. Topics include defining and describing information systems, fundamental technologies of information systems (including database and networks), the impacts of information systems on organizational strategy and structure; development of information systems; ethical issues associated with information systems management.

Lectures three hours a week.

Business 42.242★**Programming for Business Students II**

This course will develop students' programming skills, independent of any specific language. The basic concepts of iteration, sequence and selection will be studied. Algorithms for searching, sorting, string processing and numerical analysis will be studied along with data structures such as trees, heaps, lists and records. Students will apply these concepts to develop a business application program in a lan-

guage of their choice from a set of high-level programming languages.

Prerequisite: Business 42.142★ or equivalent (with a grade of C- or better).

Lectures three hours a week.

Business 42.250★

Introduction to Business Finance

A study of business firms' financing, capital investment and dividend policy decisions, cost of capital and short-term asset management problems. (Also listed as Economics 43.250★.)

Prerequisites: Economics 43.100, Business 42.104★ and 42.105★ (or 42.101★ and 42.102★) and Mathematics 69.109★ and 69.119★ or equivalent (with a grade of C- or better in 43.100 and 42.104★ and 42.105★, or 42.101★ and 42.102★).

For Honours International Business students, Economics 43.100 and Business 42.173 and 42.270★.

For students in the Management Concentration in Engineering, Business 42.270★, Engineering 91.380★ and Mathematics 69.104★ and 69.114★.

Lectures three hours a week.

Business 42.261★

Business Law I

An introduction to the legal system and legal ordering as it affects those engaged in business and economic activities. The law of tort is examined, including principles governing liability for negligence and intentional interference with others. The law of contract is studied, including the creation and enforceability of voluntary agreements and remedies for breach.

Precludes additional credit for Law 51.231★.

Prerequisite: For Business students only. Note: Students in Law programs cannot include Business 42.261★ towards the fulfilment of their degree requirements, even as an option.

Lectures and discussion three hours a week.

Business 42.262★

Business Law II

A survey of legal topics of importance to those involved in business relationships. These topics include forms of business organization, property law and specialized contractual relationships such as sale of goods, negotiable instruments, personal property security, insurance, bailment and agency.

Precludes additional credit for Law 51.232★.

Prerequisite: Business 42.261★ or Law 51.231★.

Note: Students in Law programs cannot include Business 42.262★ towards the fulfilment of their degree requirements, even as an option.

Lectures and discussion three hours a week.

Business 42.270★

Accounting Fundamentals

Students will be introduced to financial and managerial accounting from the perspective of a user of accounting data and provided with the necessary tools to understand and perform basic analysis of financial statements. The focus will be on both North American and international accounting principles and practices. Also included is the examination of product costing and the use of accounting data for management decision making and control.

Precludes additional credit for Business 42.101★, 42.102★, 42.104★ and 42.105★.

Prerequisite: Second-year standing in the Bachelor

of International Business Honours Program or in the Management Concentration in Engineering.

Lectures three hours a week.

Business 42.271★

Communications Practicum

This course develops the student's interpersonal communications skills, particularly in intercultural situations. Written English skills are also developed. The interpersonal communication is effected through experiential learning derived from classroom exercises and conceptual analysis of that experience. The writing skills are addressed through feedback on regularly submitted short papers.

Prerequisite: Second-year standing in the Bachelor of International Business Honours program.

Exercises and discussion three hours a week.

Business 42.301★

Accounting for Business Combinations

Consideration of accounting problems associated with business combinations. Particular attention is given to the preparation of consolidated financial statements. Discussion may also extend to financial reporting and diversified companies, reorganizations, etc. Selection of some topics may vary from year to year.

Prerequisite: Business 42.202★ (with a grade of C- or better).

Lectures and seminars three hours a week.

Business 42.305★

Taxation 1: Introduction to Federal Income Tax

An examination of federal income tax laws and regulations and their impact on an individual's financial and business decisions. Problems, issues and planning associated with the Income Tax Act and concerned with the computation of taxable income and taxes payable by an individual are discussed.

Prerequisite: Business 42.202★ (with a grade of C- or better).

Business 42.308★

Cost Accounting

The use of accounting information for purposes of cost control and performance evaluation. Emphasis is on cost accumulation systems, performance evaluation, control models and analytical tools.

Prerequisites: One of Business 42.102★ or 42.105★ and Economics 43.220 or Mathematics 69.267★ (with a grade of C- or better in both courses).

Lectures three hours a week.

Business 42.311★

Micro-Organizational Behaviour

The course examines models of individual and small group behaviour in organizations. Students are encouraged to think systematically about concepts such as perception, motivation, communication, group dynamics, leadership, and job design for a better understanding of employee and manager behaviour.

Prerequisites: Business 42.210★ and Psychology 49.100 or Sociology 53.100 (with a grade of C- or better in each prerequisite).

For Honours International Business students, Business 42.171★ and Political Science 47.100 (with a grade of C- or better in each prerequisite).

For students in the Management Concentration in

Engineering, Business 42.210★ and 42.224★.
Lectures three hours a week.

Business 42.312★

Personnel Management

An examination of the personnel management function in large formal organizations, with emphasis on the private sector. Topics include manpower planning, recruitment, selection, performance evaluation, career development and training, compensation and benefits and the role of the professional personnel manager.

Prerequisite: Business 42.311★.

Lectures three hours a week.

Business 42.317★

Introduction to Industrial Relations

An introduction to industrial relations covering such topics as the industrial relations systems, the functioning of trade unions, collective bargaining in Canada and Canadian public policy in industrial relations. (Also listed as Economics 43.357★.)

Prerequisite: Economics 43.100.

Lectures three hours a week.

Business 42.325★

Marketing Communications

Study of promotion as a communication process and a tool of marketing management. The course examines the planning of a promotional campaign, including budget development, consumer research in promotion, creative strategy, media strategy, non-product promotion, ethical issues and evaluating the effectiveness of promotional programs.

Prerequisite: Business 42.228★ or 42.224★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.327★

Marketing Research

This first course in marketing research covers such topics as: research design, questionnaire design, scales, sources of information and error, sampling techniques, basic statistical measures, measures of association, regression, and an overview of multivariate methods. The pragmatic implications of marketing research are stressed, with the use of case studies and actual data analysis.

Prerequisites: Business 42.228★ and one of Economics 43.220 or Mathematics 69.266★ and 69.267★.

Lectures three hours a week.

Business 42.337★

Operations Management

Examines the performance of the managerial activities entailed in selecting, designing, operating and controlling and updating production systems.

Prerequisites: Business 42.173 or 42.230★ and one of Economics 43.220 or Mathematics 69.266★ and 69.267★ (with a grade of C- or better in all courses).

Lectures three hours a week.

Business 42.338★

Simulation Methods in Business

An introduction to computer-based simulation, a widely-used method that provides a risk-free and inexpensive way of exploring the consequences of management decisions. Specific topics will include:

generating random observations, problem formulation, simulation model design, implementation using a computer language, and interpretation of simulation output.

Prerequisites: Business 42.142★ and 42.230★ and Economics 43.220 or Mathematics 69.266★ and 69.267★.

Lectures three hours a week.

Business 42.340★

Database Analysis and Design

A course emphasizing information management, database administration and software design and programming in the database environment. Topics include conceptual foundations, definitions, creation, update, maintenance, and revision of databases; role of the database structures as well as fourth generation languages and prototyping. A significant portion of the course will involve the construction of a database.

Prerequisites: Business 42.142★ (or equivalent) and 42.240★ (with a grade of C- or better in each prerequisite.)

Lectures three hours a week.

Business 42.343★

Information Systems Analysis

Methods of analysis of computer-based information systems. Topics covered in the course include: requirements analysis; the systems development life cycle; object oriented analysis; analysis of real time systems, and data analysis.

Precludes additional credit for Business 42.342★ (no longer offered) and Engineering 94.310★.

Prerequisite: Business 42.242★ or Computer Science 95.204★ or equivalent (with a grade of C- or better in each prerequisite).

Lectures three hours a week.

Business 42.344★

Information Systems Design

A continuation of Business 42.343★. Students will learn techniques to transform analysis into design. Topics will include user interface design, object oriented design, hardware, software and application design, integration and implementation.

Precludes additional credit for Business 42.342★ (no longer offered).

Prerequisites: Business 42.340★ and 42.343★ (with a grade of C- or better in each prerequisite).

Lectures three hours a week.

Business 42.350★

Corporate Finance

An examination of the major issues in corporate finance and applied financial management. Topics include: introduction to portfolio theory, the capital asset pricing model, cost of capital, capital structure and dividend policy, lease financing, capital budgeting under uncertainty, mergers and consolidations. (Also listed as Economics 43.350★.)

Prerequisites: Business 42.250★, Economics 43.202★ and one of Economics 43.220 or Mathematics 69.267★.

Lectures three hours a week.

Business 42.352★

Principles of Investments

Procedures and methods of investment analysis. The

stock and bond markets. Government regulation of securities markets. Valuation of common stocks and fixed income securities. Options, warrants, convertibles and commodities. (Also listed as Economics 43.351★.)

Prerequisites: Business 42.250★ and Economics 43.220 or Mathematics 69.267★.

Lectures three hours a week.

Business 42.354★

International Finance

An investigation of the management of corporate finance as it is affected by the requirements of international business. Issues related to international acquisitions, global investments, volatile exchange rates and hedging techniques are considered as is the role of international markets in financing corporate activity.

Prerequisite: Business 42.250★.

Lectures three hours a week.

Business 42.360★

Small Business Management

This course deals with the socio-economic functions and activities of the owner-manager entrepreneur and examines the operations and nature of small businesses. Methods and models that are useful in the analysis of a small business enterprise are employed.

Prerequisites: Business 42.224★ or 42.228★ and 42.250★.

Lectures three hours a week.

Business 42.361★

Business and Its Environment

This course provides an integrative macro-perspective of dynamic conditions that influence Canadian business, its organization, management and operations. Environmental forces studied include consumerism and other social groups, technological developments, economic conditions, politico-governmental actions and legislation as well as such contemporary issues as ecology and pollution, "the Conservator Society" and national policies and strategies for food, energy and housing. Business in its environment is studied as a system.

Prerequisites: Economics 43.100 and one of Sociology 53.100 or Psychology 49.100.

Lectures three hours a week.

Business 42.373★

International and Comparative Management

This course focuses on the problems of managing large organizations whose operations span national boundaries, including both domestic firms with international markets and multinational corporations. Special attention is given to the difficulties of maintaining lines of communication and control between elements separated by long distances and located in disparate cultural settings. The structural, legal, staffing and operational implications of maintaining a successful international operation are also discussed. Throughout the course, comparisons are drawn between domestic and international systems of management in various countries including Canada, the United States, France, Great Britain and Japan.

Precludes additional credit for Business 42.463★ (no longer offered).

Prerequisite: Business 42.271★ or 42.311★ (with a grade of C- or better).

Business 42.374★

The Environment of International Business

Theories linking environmental factors and business strategy form the conceptual basis for a study of some of the major factors and institutions that shape international business strategy. These include international trade patterns, regionalization, shifts in international finance, research and development and transnational data flows.

Prerequisite: Business 42.171★ or 42.210★.

Lectures three hours a week.

Business 42.400★

Accounting Theory

A study of the evolution of accounting theory with emphasis on concepts of income and current issues. Prerequisite: Business 42.202★, 42.250★ and one of Economics 43.220 or Mathematics 69.267★ (with a grade of C- or better in each prerequisite).

Lectures three hours a week.

Business 42.401★

Advanced Topics in Financial Accounting

A review of the standard setting process, the conceptual framework and accounting measurement models. An evaluation of selected current topics of interest.

Prerequisites: Business 42.202★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.402★

Advanced Accounting Problems

Discussion, analysis, and integration of accounting, auditing, and income tax issues and problems encountered in professional practice. This course builds upon and integrates the knowledge and skills developed in preceding courses.

Precludes additional credit for Business 42.302★, (no longer offered).

Prerequisite: Business 42.202★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.405★

Taxation 2: Corporate Tax Management

An intensive review of federal income tax laws and regulations as significant elements in the planning and decision making process of taxable Canadian corporations. Emphasis is placed upon the tax planning function of corporate management and the associated accounting and reporting aspects. This course builds upon Business 42.305★, Taxation 1. Prerequisite: Business 42.305★ (with a grade of C- or better).

Business 42.407★

Auditing I

A course in auditing theory, methodology and application.

Prerequisite: Business 42.202★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.408★**Cost Management Systems**

Discussion of the role of accounting, performance evaluation and product costing. Attention is directed to the significant changes in the manufacturing environment and the reporting problems arising therefrom.

Precludes additional credit for 42.309★ (no longer offered).

Prerequisite: Business 42.308★ (with a grade of C- or better).

Business 42.409★**Auditing II**

A continuation of Auditing I with emphasis on the audit of advanced EDP systems, computer assisted audit techniques and applications of sampling theory to auditing. A selection of topics of current interest will be discussed.

Precludes additional credit for Business 42.461★ taken in 1985-86 or before.

Prerequisites: Business 42.240★ or Computer Science 95.108★ and Business 42.407★ (with a grade of C- or better in each prerequisite).

Business 42.413★**Applied Organization Theory**

The focus is on the organization as a unit of analysis. Organizations, particularly business organizations, are analyzed from the point of view of modern administration theory. The course emphasizes management applications of various theories of organization (for example, decision, control, contingency, institutional, and modern variants of human relations theory). Analysis may utilize the traditional business case approach and/or field projects. Students learn to apply the theories in the context of the management process.

Prerequisite: Business 42.311★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.414★**Advanced Personnel Management**

This course examines a number of personnel and human resources management topics in depth. Attention is focused on the design and analysis of personnel systems, the development and critical evaluation of human resource strategies in work organizations and the study of related current issues in the practice and literature of personnel management.

Prerequisite: Business 42.312★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.415★**Organization Development and Change**

This course examines process and structural theories of organizational development and change. Issues of organizational effectiveness, problem solving and personnel development and renewal are considered along with strategies for and processes of bringing about change. Students are exposed to various theories and methods of individual and organizational diagnosis and intervention.

Prerequisite: Business 42.311★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.416★**Practicum in Interpersonal Skills**

This course focuses on the skills of supervising and working with other people including such topics as negotiating, dealing with conflict, setting goals, working with groups, organizational communication, motivating, and disciplining and dehirng employees. Students are required to integrate experiential learning from in-class exercises and homework assignments with theoretical and empirical knowledge from the literature. Limited class sizes and enrolment.

Prerequisites: Business 42.311★ (with a grade of C- or better).

Lectures, seminars, and laboratory tutorials three hours a week.

Business 42.425★**International Marketing**

A study of the marketing function in international markets from a managerial perspective. This course examines the unique environments of foreign markets in relation to the marketing management functions of product, price, distribution and communication strategy as well as marketing research. It also studies international expansion methods, joint ventures and other business alliances, and international marketing in the context of trading blocs.

Prerequisite: Business 42.228★ or 42.224★ (with a grade of C- or better in each prerequisite).

Business 42.426**Consumer Behaviour**

The traditional socio-psychological theories of consumer behaviour are examined. Stress is put on the current literature and on the fundamental theories and concepts from various disciplines. Topics include motivation, personality, perception, learning, communication of innovations, attitude theory, role theory, life style analysis, consumerism, etc.

Prerequisite: Business 42.228★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.428★**Marketing Management**

This course emphasizes the "managerial" aspects of marketing. Such topics as: market segmentation, social and regulatory aspects in marketing, channels of distribution, industrial marketing, sales force management and other current topics are discussed in detail.

Prerequisite: One of Business 42.325★ or 42.327★ (with a grade of C- or better in each prerequisite).

Lectures three hours a week.

Business 42.435★**Operations Research II**

Dynamic programming inventory models, queuing, simulation, non-linear programming. (Also listed as Economics 43.405★.)

Prerequisites: Business 42.230★ or Economics 43.404★, or Mathematics 69.381★, and Economics 43.220 (with a grade of C- or better) or Mathematics 69.267★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.438★**Project Management**

Systems approach to project planning and control.

Analysis of alternative network planning methods: CPM, precedence and PERT. Planning procedures, computer techniques and estimating. Physical, economic and financial feasibility. Implementation feedback and control. Case studies. (Also listed as Engineering 82.440★.)

Prerequisites: Fourth-year Honours Business standing.

Lectures two hours a week, problem analysis three hours alternate weeks.

Business 42.439

Statistical Decision Theory

An examination of Bayesian and classical approaches to decision making under uncertainty for individuals and firms. (Offered in the Department of Economics as Economics 43.406★ and 43.407★. Students are advised that it is preferable to take Economics 43.406★ prior to 43.407★.)

Prerequisites: Economics 43.202★, and Economics 43.220 or Mathematics 69.267★ (with a grade of C- or better in each prerequisite).

Business 42.440★

Management of Information Systems

Comprehensive treatment of current trends and management issues associated with information systems within organizations of local, national and international scope. Issues and techniques of information systems planning, administration, resource management and new technology adoption are discussed. Topics may also include information centres, managing end-user computing, managing distributed systems, education and cultural issues. Case studies will be used.

Prerequisites: Fourth-year standing, Business 42.210★ and one of Business 42.240★ or Computer Science 95.204★ (with a grade of C- or better in each prerequisite).

Business 42.442★

Information Systems Analysis and Design Practicum

This is a project course. Students are required to form teams for the purpose of designing and implementing a typical business information system. Projects are drawn from actual problems suggested by local business and institutions.

Prerequisites: Business 42.343★ and one of Business 42.344★ or Computer Science 95.304★ (with a grade of B- or better). Permission of the School of Business may be granted to students with a C- or better in the prerequisites.

Lectures three hours a week.

Business 42.446★

Decision Making and Support Systems

The course describes the framework, processes and technology components for building decision support systems, including planning and organizing for DSS, system design and iterative design, integrating DSS into the organization. Topics include modern technologies such as group support systems, negotiation support systems, meeting and teleconferencing systems, knowledge based systems and artificial intelligence. High level modelling languages and labs are used to provide first-hand experience in developing DSS for business applications.

Prerequisites: Business 42.230★ or equivalent and

one of Business 42.240★ or Computer Science 95.304★ (with a grade of C- or better in each prerequisite).

Lectures three hours a week.

Business 42.447★

Technology Project Management

Organizational, managerial and technical issues of information system projects. Value of project management. Project environment and the distinguishing characteristics of information systems projects. Types of information systems projects. Defining and setting up successful projects. Characteristics of successful project managers. Tracking and monitoring the project. Product management over the life of the project. Management of the project. Project management tools and methods. Estimation techniques and impact of development and quality processes. Risk analysis. Investment and valuation. Project management software. Project change and death. Learning from projects. Examples and case studies.

Prerequisite: Business 42.230★ or equivalent (with a grade of C- or better).

Lectures three hours a week.

Business 42.450★

Advanced Corporate Finance

An in-depth examination of some of the major theoretical issues in corporate finance. This course requires analyses and presentations of both articles from the finance literature and case studies. (Also listed as Economics 43.408★.)

Prerequisite: Business 42.350★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.452★

Investment Management

Analysis of investment requirements for individuals and institutional investors. Liquidity, risk and return. Portfolio design, construction, management and control. Performance measurement. Capital market theory. (Also listed as Economics 43.411★.)

Prerequisite: Business 42.352★ (with a grade of C- or better).

Lectures three hours a week.

Business 42.453★

Finance and Capital Markets

The workings and structure of Canada's capital markets with particular reference to differing classes of institutional lenders and borrowers; relationships of non-bank financial intermediaries to the banking system, regulatory agencies and the public, the impact of these institutions on corporate financial and national economic policy, access to foreign capital markets and external financing of Canadian economic development. (Also listed as Economics 43.410★.)

Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.220 or Mathematics 69.267★ (with a grade of C- or better in each prerequisite).

Lectures and seminars three hours a week.

• Topics in Management Studies (42.460★ - 42.467★)

During the 1996-97 academic year, the School of Business expects to offer the following special-topics courses:

Business 42.460★**Topics in Management Studies**

Consideration of selected topics in accounting, finance, human resources, information systems, international business, marketing, operations management, etc.

Prerequisite: Permission of the School.

Business 42.461★**Business Ethics**

This course focuses on the use of ethical reasoning to analyse business decisions. It is meant to help students recognize the ethical content of these decisions, to help legitimize the role of ethics in business situations, to give students practice in ethical reasoning and to give them some familiarity with major ethical systems.

Prerequisite: Fourth-year Honours Commerce or Fourth-year Honours International Business standing.

Business 42.462★**Women in Management**

This course examines both the organizational and personal challenges arising from changing gender roles and the increased participation of women in management and professional organizational roles.

Prerequisite: Business 42.311★ or Women's Studies 09.188 with at least Third-year standing.

Business 42.464★**The Business Environment in East/Central Europe and the Soviet Successor States**

An examination of the economic and legal environment in which new businesses are emerging in the region and the practical problems which face business ventures. Themes will include regulatory structures, patterns or foreign trade, market characteristics, scientific and technological base and business culture. (Also listed as East European Studies 55.406★).

Prerequisites: Economics 43.371★ or 43.372★, or Business 42.361★ or permission of the School of Business.

Seminar three hours a week.

Business 42.465**Directed Studies I**

This course is intended to provide qualified students with the opportunity of carrying out a major research project under the supervision of a faculty member. Students should enquire about procedures for Directed Studies in advance of the term in which they intend to register for the course.

Prerequisites: Grade-point average of 10.0 or better and permission of the School.

Business 42.466★**Directed Studies II (Term Paper)**

This course provides qualified students with the opportunity of carrying out a minor (one-term) research project under the supervision of a faculty member. Students should enquire about procedures for Directed Studies in advance of the term in which they intend to register for the course.

Prerequisites: GPA of 10.0 or better and permission of the School.

Business 42.467★**Management of Technology and Innovation**

This course focuses on the planning, development

and implementation of technological capabilities for the purpose of attaining the strategic and operational goals of business organizations. Students are exposed to four themes: integration of technology and strategy; the design of technological strategy; the development of new business around new technology; and the management of corporate research and development, including pre-competitive consortia.

Prerequisite: Business 42.461★ (if taken in 1988-89).

Prerequisites: Business 42.210★, 42.224★ or 42.228★ and one of Business 42.240★, Computer Science 95.108★ or Engineering 91.167★ (with a grade of C- or better in each prerequisite).

Lectures and seminars three hours a week.

Business 42.468★**History of Business in Canada 1850-1980**

An examination of the place of business in Canadian society, economics and politics. The course covers both the internal dynamics of Canadian business (organization, strategy, the rise of the manager), and its external implications (competition, foreign investment, business-government relations). Business students are required to apply a historical perspective to issues and problems present in the contemporary business environment. (Also listed as History 24.325★.)

Prerequisite: Fourth-year standing in the School of Business.

Business 42.469★**Strategic Management and Business Policy**

This course focuses upon the management process in business. It examines the functions and responsibilities of managers in the areas of strategy formulation and implementation. It is designed to integrate previous work in the functional disciplines of business administration by developing an overall analytical viewpoint.

Prerequisite: Fourth-year Honours Commerce or Fourth-year Honours International Business standing.

Lectures three hours a week.

Business 42.474★**Workshop on International Management and Global Business**

An examination of a particular managerial field from an international perspective. Possible topics include personnel management in the global firm, international information systems, international logistics, and international research and development.

Prerequisites: Third-year Honours Commerce or Third-year Honours International Business standing. Lectures three hours a week.

Business 42.490★**Auditing III**

This course reviews the fundamental role of auditing and develops an understanding of issues and challenges facing the profession such as comprehensive auditing and auditing small businesses and non-profit organizations. Integration of topics from this course and its prerequisites is accomplished primarily through applications problems.

Prerequisite: Business 42.407★ (with a grade of C- or better).

(Arts)

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Academic Administration

Director

P. Armstrong

Supervisor of Graduate Studies

K. Arnup

Supervisor of Undergraduate Studies

P. Rankin

Members of the Program Committee

P. Armstrong

K. Arnup

M. Davies

M. Dion Stout

S. McMullin

H. Menzies

P. Rankin

J. Smith

J. Vickers

General Information

The undergraduate program in Canadian Studies aims to provide students with a broad, interdisciplinary view of Canada while at the same time allowing them to combine their study with disciplinary training in other Arts and Social Science departments if they so desire. Canadian Studies offers Pass, Combined Pass and Combined Honours programs.

The program forms the undergraduate division of the School of Canadian Studies and, like the graduate division of the School, benefits from Carleton University's situation in Canada's capital and the richness of material available in Ottawa for such studies.

The program core is designed to give the student a broad understanding of Canadian history, culture and society, and the opportunity to study the relationships among various aspects of Canada in some depth.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all Committee regulations and requirements as set out below.

Pass Program

Core Credits

The Pass program in Canadian Studies requires a core of the following 4.0 credits:

1. Canadian Studies 12.100, Introduction to Canadian Studies;
2. French 20.150 Advanced French (A), or 23.190 Introduction to an Indigenous Language.
3. At least one of Canadian Studies 12.200, Culture, Identity and Community in Canada or 12.288, Contemporary English-Canadian and French-Canadian Literature.

4. Canadian Studies 12.302, Canadian Studies Seminar.

With permission of the Undergraduate Supervisor, students with advanced proficiency in the French language may substitute, for the language requirement, a credit in Quebec culture or society that is taught in French. Carleton University courses that may normally be used for this purpose are: French 20.267★, 20.268★, 20.281★, 20.332, 20.381.

A GPA of 4.0 or better must be achieved in the required credits of the program core.

Program Electives

In addition to the 4.0 core credits, the Canadian Studies Pass program student must take the following 6.0 credits:

1. 1.0 Arts credit and 1.0 Social Science credit from the following list:

Arts

Art History 11.202★, Canadian Art: Origins to Present, and 11.300★, Canadian Painting and Sculpture or 11.301★, Contemporary Canadian Art; English 18.282, Canadian Literature, or 18.381, Canadian Poetry, or 18.383, Canadian Fiction; French 20.267★, La littérature du XIXe siècle au Canada français and 20.268★, La littérature du XXe siècle au Canada français; History 24.233, Canadian Political History, or 24.234, Canadian Social History, or 24.235, Canadian Economic History.

Social Sciences

Economics 43.325, The Economic Development of Canada; Geography 45.320★, The Canadian City and 45.255★, Contemporary Geographic Issues, or 45.335, Historical Geography of Canada; Political Science 47.200, Canadian Government and Politics, or 47.201, Introduction à la politique canadienne; Sociology-Anthropology 56.220, Canadian Society.

2. 1.0 Arts and 1.0 Social Science credit from the list of courses with substantial Canadian content. (See p. 183.)

3. 2.0 additional credits with substantial Canadian content.

At least two of the program electives must be above the 200-level.

The same course may not be used to satisfy more than one of the alternative French requirements for core courses and the requirements for program electives.

Combined Pass Program

Core Credits

The Combined Pass program in Canadian Studies requires a core of the following 4.0 credits:

1. Canadian Studies 12.100, Introduction to Canadian Studies;
2. French 20.150 Advanced French (A), or 23.190 Introduction to an Indigenous Language;
3. At least one of Canadian Studies 12.200, Culture, Identity and Community in Canada or 12.288, Contemporary English-Canadian and French-Canadian Literature;
4. Canadian Studies 12.302, Canadian Studies Seminar.

With the permission of the Undergraduate Supervisor, students with advanced proficiency in the French language may substitute, for the language requirement, another course in Quebec culture or society which is taught in French. Carleton University courses that may normally be used for this purpose are: French 20.267★, 20.268★, 20.281★, 20.332, 20.381.

A GPA of 4.0 or better must be achieved in the required credits of the program core.

Program Electives

In addition to the 4.0 core credits, the Canadian Studies Combined Pass program student must take the following 2.0 credits:

1. 1.0 credit from the following list:
Art History 11.202★, Canadian Art: Origins to Present, or 11.300★, Canadian Painting and Sculpture, or 11.301★, Contemporary Canadian Art;
English 18.282, Canadian Literature, or 18.381, Canadian Poetry, or 18.383, Canadian Fiction;
Economics 43.325, The Economic Development of Canada;
French 20.267★, La littérature de XIXe siècle au Canada français or 20.268★, La littérature du XXe siècle au Canada français;
Geography 45.320★, The Canadian City or 45.255★, Contemporary Geographic Issues, or 45.335, Historical Geography of Canada;
History 24.233, Canadian Political History, or 24.234, Canadian Social History, or 24.235, Canadian Economic History;
Political Science 47.200, Canadian Government and Politics, or 47.201, Introduction à la politique canadienne;
Sociology-Anthropology 56.220, Canadian Society.
2. 1.0 credit from the list of courses with substantial Canadian content. (See p. 183.)

At least one of the program electives must be above the 200-level.

Students who wish to use one of the courses required by Canadian Studies to fulfil a requirement of their second major discipline may negotiate a substitute course with the Canadian Studies Undergraduate Supervisor. At least one of the program electives in the Combined Pass degree program must be in the

Faculty other than the one from which the student's second major is chosen.

The same course may not be used to satisfy more than one of the alternative French requirements for core courses and the requirements for program electives.

Combined Honours Program

Core Credits

The Combined Honours program in Canadian Studies requires a core of the following 5.0 credits:

1. Canadian Studies 12.100, Introduction to Canadian Studies;
2. French 20.150 Advanced French (A), or 23.190 Introduction to an Indigenous Language;
3. At least one of Canadian Studies 12.200 Culture, Identity and Community in Canada or 12.288, Contemporary English-Canadian and French-Canadian Literature.
4. Canadian Studies 12.302, Canadian Studies Seminar.
5. Canadian Studies 12.402, Canadian Studies Seminar.

With the permission of the Undergraduate Supervisor, students with advanced proficiency in the French language may substitute, for the language requirement, a credit in Quebec culture or society that is taught in French. Carleton University courses that may normally be used for this purpose are: French 20.267★, 20.268★, 20.281★, 20.332, 20.381, 20.468★, 20.469★.

Program Electives

In addition to the 5.0 core credits, the Canadian Studies Combined Honours program requires the following 3.0 credits:

1. 1.0 credit from the following list:
Art History 11.202★, Canadian Art: Origins to Present, or 11.300★, Canadian Painting and Sculpture, or 11.301★, Contemporary Canadian Art;
English 18.282, Canadian Literature, or 18.381, Canadian Poetry, or 18.383, Canadian Fiction;
Economics 43.325, The Economic Development of Canada;
French 20.267★, La littérature de XIXe siècle au Canada français or 20.268★, La littérature du XXe siècle au Canada français;
Geography 45.320★, The Canadian City or 45.255★, Contemporary Geographic Issues, or 45.335, Historical Geography of Canada;
History 24.233, Canadian Political History, or 24.234, Canadian Social History, or 24.235, Canadian Economic History;
Political Science 47.200, Canadian Government and Politics, or 47.201, Introduction à la politique canadienne;
Sociology-Anthropology 56.220, Canadian Society.
2. 1.0 Arts credit and 1.0 Social Science credit from the list of courses with substantial Canadian content on p. 183, one of which must be at the 400-level.

The same course may not be used to satisfy more than one of the alternative French requirements for core courses and the requirements for program electives.

Mention: français

Students who wish to qualify for the "Mention: français" notation (see p. 55) in Canadian Studies may do so by fulfilling the requirements listed below, in consultation with the Undergraduate Supervisor. Courses taken for the "Mention: français" notation may be used to fulfil Pass and Honours degree requirements.

Courses taught in French at the University of Ottawa, or at another university, which are approved by the Undergraduate Supervisor, may be used to satisfy the "Mention: français" requirements. Students who wish to enrol in University of Ottawa courses for this purpose must do so through the University of Ottawa Exchange Agreement (p. 74). To enrol in courses in French at another university a letter of permission is required. (See articles 3.12 and 3.13, on p. 73.)

Pass or Combined Pass Programs

To graduate with the notation "Mention: français" students must include the following courses in their degree program:

1. 1.0 credit in the advanced study of the French language (French 20.152, or another advanced course in French Language).
2. 1.0 credit in French-Canadian culture and heritage (French 20.267★, 20.268★, 20.281★, or a course in another appropriate discipline, given in French, which is approved by the Undergraduate Supervisor). Courses from the University of Ottawa or another university must be approved by the Undergraduate Supervisor.
3. 1.0 credit on a Canadian subject at the 200- or 300-level that is taught in French in any appropriate discipline. For Carleton University courses that may be used to fulfil this requirement, consult the list of courses with substantial Canadian content (p. 183). Courses from the University of Ottawa or another university must be approved by the Undergraduate Supervisor.
4. Combined Pass program students must meet the "Mention: français" requirements of both disciplines.

Combined Honours Program

To graduate with the notation "Mention: français" students must include the following courses in their degree program:

1. 1.0 credit in the advanced study of the French language (French 20.152, or another advanced course in French Language).
2. 1.0 credit in French-Canadian culture and heritage (French 20.267★, 20.268★, 20.281★, or a course in another appropriate discipline, given in French, which is approved by the Undergraduate Supervisor). Courses from the University of Ottawa or another

university must be approved by the Undergraduate Supervisor.

3. 1.0 credit on a Canadian subject at the 200- or 300-level, taught in French, in any appropriate discipline. For Carleton University courses that may be used to fulfil this requirement, consult the list of courses with substantial Canadian content (p. 183). Courses from the University of Ottawa or another university must be approved by the Undergraduate Supervisor.
4. 1.0 credit on a Canadian subject at the 400-level, taught in French, including either Canadian Studies 12.493★ and 12.494★, or a directed studies, tutorial, research paper, or course in any appropriate discipline. All written work must be submitted in French. Note that directed studies, tutorials, and research papers are weighted differently in various departments. Courses from the University of Ottawa or another university must be approved by the Undergraduate Supervisor.
5. Combined Honours program students must meet the "Mention: français" requirements of both disciplines.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Canadian Studies 12.100

Introduction to Canadian Studies

This course is designed to introduce students to the interdisciplinary study of Canadian society and culture. It introduces a variety of important approaches through the analysis of significant issues from Canada's past and present. Topics may include some of the following: original peoples, language and ethnicity, communications and technology, immigration, arts and culture, economic development, the environment, regionalism, religion, gender, sovereignty, Quebec and English Canada, foreign relations.

Three hours a week.

Canadian Studies 12.200

Culture, Identity and Community in Canada

Using an interdisciplinary approach, this course explores the composition and diversity of cultures in Canada. Aspects of social and material cultures, folklore, citizenship and the politics of multiple identities are addressed.

Prerequisite: Canadian Studies 12.100.

Three hours a week.

Canadian Studies 12.288

Contemporary English-Canadian and French-Canadian Literature

This course, which is offered by faculty members from the Departments of French, and English Language and Literature, provides a general introduction to and comparison of the two major literatures of Canada. Lectures are given in both English and French. (Also listed as English 18.288 and French

20.288.)

Precludes additional credit for Canadian Studies 12.188 (no longer offered).

Prerequisites: A basic reading knowledge of French, and Second-year standing.
Three hours a week.

Canadian Studies 12.302

Canadian Studies Seminar

This course is designed to allow the student to bring together the knowledge acquired in the various disciplines of the program. Each year a different topic or topics are explored in an interdisciplinary perspective. The topic for 1996-97 is: Representation and Social Change in Canada. This course offers an interdisciplinary examination of issues grounded in race, class and gender divisions. Students will study the relationship between cultural representation and political power. Emphasis will be placed on analyzing how social change around race, class and gender issues is achieved.

Prerequisite: Third-year standing in Canadian Studies or permission of the School.

Seminar three hours a week.

Canadian Studies 12.380

Internship Practicum

A limited number of internships and practicum placements are available in institutional settings, primarily in the Ottawa area. Students are required to submit a formal written report concerning their placement. The written work is evaluated jointly by the student's internal and placement supervisors. A maximum of 1.0 credit of internship/practicum may be offered in fulfilment of Canadian Studies requirements.

Prerequisite: Permission of the School.

Canadian Studies 12.381★

Internship/Practicum

For course description, see Canadian Studies 12.380.

Prerequisite: Permission of the School.

Canadian Studies 12.382★

Internship/Practicum

For course description, see Canadian Studies 12.380.

Prerequisite: Permission of the School.

Canadian Studies 12.383★

Internship/Practicum

For course description, see Canadian Studies 12.380.

Prerequisite: Permission of the School.

Canadian Studies 12.402

Canadian Studies Seminar

This course is designed to allow the Honours student to engage in research and class discussion on topics of an interdisciplinary nature. The topic for 1996-97 will be Canada in the Global Village. This course examines how Canada was constructed as a modern technological society and explores economic and cultural critiques of Canada's technological dependency. The course challenges traditional analyses of Canada as a technologically dependent state and offers other images and possibilities for being Canadian in the emerging global technological world order. Seminar three hours a week.

Canadian Studies 12.491★

Selected Problems in Canadian Studies

The choice of topics varies from year to year.
Prerequisite: Permission of the School.

Canadian Studies 12.492★

Selected Problems in Canadian Studies

The choice of topics varies from year to year.

Canadian Studies 12.493★

Etudes dirigées I

Cours facultatif offert seulement aux étudiants de quatrième année Honours en Etudes canadiennes ("Mention: français"). Ce cours comprend des lectures dirigées et des travaux écrits dans un domaine relié aux Etudes canadiennes.

Prerequisite: Permission of the School.

Canadian Studies 12.494★

Etudes dirigées II

Cours facultatif offert seulement aux étudiants de quatrième année Honours en Etudes canadiennes ("Mention: français"). Ce cours comprend des lectures dirigées et des travaux écrits dans un domaine relié aux Etudes canadiennes.

Prerequisite: Permission of the School.

Canadian Studies 12.495★

Directed Studies I

An optional course normally restricted to Fourth-year Honours students in Canadian Studies and to Qualifying-year Graduate students. It includes supervised reading and written work in a Canadian Studies area.

Prerequisite: Permission of the School.

Canadian Studies 12.496★

Directed Studies II

An optional Course normally restricted to Fourth-year Honours students in Canadian Studies and to Qualifying-year Graduate students. It includes supervised reading and written work in a Canadian Studies area.

Prerequisite: Permission of the School.

Courses with Substantial Canadian Content Offered within the Arts and Social Sciences Faculties

Applied Language Studies

23.190 Introduction to an Indigenous Language

Art History

- 11.202★ Canadian Art: Origins to Present
- 11.205★ Arts of the First Peoples: the Woodlands, the Plains and the Subarctic
- 11.206★ Arts of the First Peoples: The Southwest, the West Coast and the Arctic
- 11.300★ Canadian Painting and Sculpture
- 11.301★ Contemporary Canadian Art
- 11.302★ Canadian Architecture
- 11.314★ Inuit Art
- 11.400★ Topics in Canadian Art
- 11.404★ Topics in Canadian Indian Art
- 11.405★ Topics in Canadian Indian Art
- 11.480★ Topics in Architectural History

Economics

- 43.235 Canadian Economic History
- 43.320★ Economics of Information and the Media

- 43.325 The Economic Development of Canada
 43.330★ Public Policy Towards Business
 43.335 Political Economy in the Modern State
 43.341★ Regional Economics
 43.344★ Economic Thought and Policy in Canada
 43.347★ Public Finance: Taxation
 43.348★ Public Finance: Expenditure
 43.357★ Introduction to Industrial Relations
 43.367★ Monetary and Financial Institutions
 43.380★ Topics in Canadian Economic Policy
 43.436★ Employment Economics and Labour Policy
 43.410★ Finance and Capital Markets
 43.441★ Public Sector Economics - Taxation
 43.442★ Public Sector Economics - Expenditures
 43.465 Industrial Relations
 43.471★ National Accounting
- English Language and Literature*
 18.288 (Canadian Studies 12.288) Contemporary English-Canadian and French-Canadian Literature
 18.282 Canadian Literature
 18.381 Canadian Poetry
 18.383 Canadian Fiction
 18.481★ Selected Topic in Canadian Poetry
 18.482 Studies in Canadian Ethnic Minority Literature
 18.483 Studies in the Literature of Quebec and English Canada
 18.486★ Studies in Canadian Literature I
 18.487★ Studies in Canadian Literature II
 18.488 Canadian Writing and the Literature of the First Nations
- Film Studies*
 19.229 The Canadian Cinema
- French*
 20.163 Introduction to Literature: French Canadian Texts from the End of the Nineteenth Century to the Present
 20.267★ La littérature du XIXe siècle au Canada français
 20.268★ La littérature du XXe siècle au Canada français
 20.288 (Canadian Studies 12.288) Contemporary English-Canadian and French-Canadian Literature
 20.364★ Le Théâtre: Désignation littérature québécoise
 20.381 Aspects de la littérature intime au Québec
 20.436★ Aspects de la linguistique du français III: Le français canadien, normes et usages
 20.468★ Aspects de la littérature canadienne-française I: Gabrielle Roy: autobiographie et fictions
 20.469★ Aspects de la littérature canadienne-française II: Poétique de la poésie avant-gardiste au Québec
- Geography*
 45.230★ The Cultural Landscape
 45.301★ Social Geography Methods
 45.318★ Soil Properties
 45.319★ Soils and Environment
 45.320★ The Canadian City: Internal Structure and Contemporary Problems
 45.335 Historical Geography of Canada
 45.336★ Resource Analysis in Geography
 45.351★ Northern Lands
 45.255★ Canada: Contemporary Geographic Issues
 45.370★ Population Geography
 45.404★ Environmental Impact Assessment
 45.411★ Quaternary Geography
 45.423★ Urban Revitalization
 45.425★ Space, Place and Well-Being
 45.426★ Health, Environment and Society
 45.427★ Urban Development and Analysis
 45.431★ Advanced Cultural Geography
 45.435★ Historical Geography
 45.442★ Transportation Geography
 45.443★ Issues in Applied Geography
 45.447 Canadian Agriculture
- History*
 24.130 Introduction to Canadian History
 24.233 Canadian Political History
 24.234 Canadian Social History
 24.235 Canadian Economic History
 24.322★ Capital Cities in the Modern World
 24.324 Colonial Frontier Societies
 24.325★ History of Business in Canada 1850-1980
 24.326★ Old Canada, 1740s-1850s
 24.328★ Eastern Ontario Communities
 24.329★ Canadian Urban History
 24.330★ The History of Upper Canada to 1867
 24.331★ Quebec Since the 1860s
 24.332★ The Atlantic Provinces
 24.333★ The History of Ontario, 1867-1967
 24.334★ Canada-United States Relations
 24.335 History of Canadian Labour
 24.336★ Canadian External Relations
 24.337★ Development and Underdevelopment in Atlantic Canada, 1660-1960
 24.339★ History of the Prairie West
 24.340★ History of Canadian Socialism since 1890
 24.350★ Canadian Immigration and Settlement 1760-1875
 24.351★ Selected Topics in Canadian History
 24.352★ Aboriginal Peoples of British North America to 1867
 24.353★ Aboriginal Peoples of Canada Since 1867
 24.354 Women and North American Society
 24.355★ History of British Columbia
 24.356★ Welfare and Poverty in Canadian History
 24.357★ Canadian Immigration and Settlement Since 1875
 24.362★ Image and Actuality in the History of the Modern Canadian Family
 24.421 Science and Technology in the Canadian Experience
 24.422 The Maritimes in Transition, 1870s to 1920s
 24.424 Canadian Immigration and Ethnic History
 24.425 Selected Problems in the Political Economy of Canadian Labour
 24.426 Perspectives on State Formation in Canada
 24.430 Colonial Society in British North America
 24.431 Canada from Confederation to the Great War
 24.432 Acadian and Quebec Society before 1763

- 24.433 Selected Problems in Canadian Business History, 1850-1980
 24.434 History of Northern Canada
 24.435 Elites and Elite Formation in Canadian Society, 1800-1925
 24.437 Canada From War to War
 24.438 Studies in Canadian Popular Culture
 24.439 Modern Canada Since 1939
- Italian*
 26.262 The Italian Heritage in North America
- Law*
 51.100 Introduction to Legal Studies
 51.203 Introduction to Private Law Relationships
 51.204 Introduction to Criminal Law in Context
 51.205 Introduction to Public Law
 51.301★ Women and the Legal Process
 51.302★ Canadian Legal Profession
 51.303★ Contracts
 51.336★ Criminal Law: Process and Politics
 51.337★ Young Offenders and the Law
 51.341★ Employment Law
 51.345★ Labour Law
 51.348★ Legal Aspects of Sport
 51.350★ Constitutional Law
 51.351★ Communications Law I
 51.352★ Communications Law II
 51.353 Civil Liberties and Human Rights
 51.354★ Law and Aboriginal Peoples of Canada
 51.356 Administrative Law
 51.380★ Law of Environmental Quality
 51.384 Law of the Family
 51.406★ Church and State in the Laws of England, Scotland and Canada
 51.435★ Criminal Justice Reform: Theory and Practice
 51.438★ Sentencing Theories and Practice
 51.440★ The Arbitration Process in Industrial Relations
 51.445★ Labour Relations in the Public Service
 51.456★ Administrative Law I
 51.457★ Administrative Law and Control
 51.467★ Immigration and Refugee Law
- Linguistics*
 29.273★ Gender and Language
 29.274★ Bilingualism
- Music*
 30.310 Music in Canada
 30.332★ Music and Gender I
 30.433★ Music and Gender II
- Philosophy*
 32.202 Ideas of the Individual and Society in Canada
- Political Science*
 47.200 Canadian Government and Politics
 47.201 Introduction à la politique canadienne
 47.300★ Canadian Provincial Politics
 47.301★ Canadian Intergovernmental Relations
 47.302★ Canadian Municipal Government
 47.303★ Canadian Urban Politics
 47.304★ Political Parties and Elections in Canada
 47.305★ Ontario Government and Politics
 47.306★ Social Power in Canadian Politics
 47.307★ Constitutional Politics in Canada
 47.319★ The Politics of Law and Morality
 47.335★ Canadian Political Ideas
 47.336★ Canadian Political Culture
 47.341★ Canadian Public Administration
 47.342★ Canadian Public Policy
 47.346★ Public Affairs Strategies
 47.366★ Canadian Foreign Policy
 47.367★ Canadian Defence Policy
 47.400 Topics in Canadian Government and Politics
 47.402★ Policy Seminar: Problems of Northern Development
 47.403★ Politics and the Media
 47.405 Federalism
 47.406★ Legislative Process in Canada
 47.407★ The Politics of Law Enforcement in Canada
 47.408★ National Security and Intelligence in the Modern State
 47.409★ Politics in Quebec
 47.410★ Canadian and Comparative Local Government and Politics
 47.411★ French-English Relations
 47.416★ Labour and the Canadian State
 47.417★ Political Participation in Canada
 47.418★ Canadian Provincial Government and Politics
 47.419★ The Politics of the Canadian Charter of Rights and Freedoms
 47.424★ Elections
 47.441★ Business-Government Relations in Canada
- Sociology and Anthropology*
 56.220 Canadian Society
 56.241 Kinship, Marriage and the Family
 53.247 Women in Society
 53.252★ Sociology of Aging and the Elderly
 53.256★ Police in Society
 54.318★ Archaeology in Canada
 54.319★ Issues in Canadian Native Studies
 56.320 French Canada and Quebec Society
 56.327★ Métis People in Canada
 53.373★ Criminal Justice Policy
 53.377★ Sociology of Welfare Institutions
 56.465★ Selected Problems in the Study of Ethnic and Race Relations
 54.470★ Workshop in North American Aboriginal Studies
- Women's Studies*
 09.491A★ Selected Topics in Women's Studies I
 09.491B★ Selected Topics in Women's Studies II
 09.492★ Selected Topics in Women's Studies III
- The School of Journalism and Communication offers the following courses with substantial Canadian content:*
- Journalism*
 28.306★ Comparative Media Studies
 28.351★ Communications Law I
 28.352★ Communications Law II
- Mass Communication*
 27.211 The Mass Media in Modern Society
 27.430★ Policy: Theory and Foundations
 27.432★ Policy: Institutions and Practices

Institute of Central/East European and Russian-Area Studies

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(Social Sciences)

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Academic Administration

Acting Director
Carl H. McMillan

Honours Adviser
Carl H. McMillan

Teaching Staff

Associated Members

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R. Carson
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A. Chandler
J. DeBardeleben
P. Dutkiewicz
C. Jacobsen
D. le Berrurier
A. Lewinson
D. Long
M. McMahon
C. McMillan
G. Ozomoy
J. Paltiel
A. Podgorecki
L. Strickland

Adjunct Members

M. Carley
H. Diskin
A. Donskov
J. Fedorowicz
J. Fraser
A. Kagedan
M. Los
M. Opalski
P. Roberts
M. Sabanadze

General Information

A Committee on Soviet and East European Studies was formed in 1963 to foster interdisciplinary studies, research, conferences and publications in this area. The Committee was transformed into the Institute of Soviet and East European Studies in 1970. Following the collapse of the Soviet Union at the end of 1991, the Institute was renamed the Institute of Central/East European and Russian-Area Studies to reflect the new political reality in the region. Faculty members from eleven disciplines (Art History, Economics, Geography, History, International Affairs, Law, Political Science, Psychology, Russian, Business and Sociology) participate in the Institute's programs. They are joined on an occasional basis by

visiting scholars (including visitors from the Soviet successor states and East/Central Europe).

In recent years the East and Central European countries and former Soviet republics have been in the midst of a transition from one type of socio-economic and political system to another, although they are still linked with each other by earlier historical experience, the common legacy of Soviet-style communism, and by a set of similar problems resulting from that legacy. Since the collapse of the Soviet Union, the field of study remains unified by a concern with understanding the nature of the transitional processes affecting the region, in their multiple social, cultural, economic and political dimensions. Institute courses and research programs focus on several broad themes. These themes are treated in historical context, with attention to historical roots of and parallels with contemporary developments. Major themes include: the legacy of the Soviet system in the region and its impact on contemporary developments; transition periods in the history of the region, with particular emphasis on political, economic, and social dimensions of the post-communist transition; nationalism and ethnicity as forces for change in the area; international integration among countries of the region, and the reintegration of the region into the larger international community; environmental problems and policies in a comparative perspective; the changing relationship between state and society, with attention to ethnic, class, and gender issues.

On the undergraduate level, the Institute offers an interdisciplinary Bachelor of Arts (Honours) program in Central/East European and Russian-Area Studies. The Institute also administers a program of interdisciplinary studies leading to a Master of Arts degree in Central/East European and Russian-Area Studies, the first one of its kind in Canada. The curricula for both programs are offered largely through participating departments. Students in the Institute's programs are eligible to apply, under the academic exchange agreement between Carleton University and the University of St. Petersburg, and Moscow State University, for ten months of study in Russia. A similar exchange agreement exists with the University of Warsaw; and an agreement with the International Cultural Institute in Budapest provides for graduate studies at post-secondary institutions in Hungary. Students participating in the Institute's programs have at their disposal a specialized periodicals reading room, the University library's collection of books, documents, periodicals and micro-materials on the former Soviet republics and on Central and Eastern Europe and the extensive holdings of the National Library and other specialized libraries in Ottawa. As of the Fall term 1987, the Institute has had a system in place for viewing live Russian television.

Each year the Institute organizes a series of public seminars and lectures by invited specialists from outside the University, on a broad range of topics bearing on the Soviet successor states and/or Central and Eastern Europe. The Institute also sponsors frequent conferences and colloquia and promotes extension courses in the area. The Institute maintains research programs in several broad areas: East-West relations (with emphasis on their economic aspects), nationality and minority issues, environmental policy, social consequences of economic

change, and aspects of Canadian-Soviet relations. The Institute issues working papers and special studies, and has sponsored ten volumes in the Carleton Library Series in Soviet and East European Studies.

In the face of current transformations, the region retains enormous importance in shaping larger global processes and the international balance of power; expanded economic opportunities in the area also are increasing the demand for area specialists in the business and financial communities. A new emphasis on regional studies and international relations at the secondary level makes this program attractive to school boards. Therefore, a degree in Central/East European and Russian-Area Studies provides a valuable preparation for a career in government service, in business and finance, or in non-governmental organizations. Some students find interdisciplinary and language studies an important first step to more specialized training in law, business or in one of the related academic disciplines.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all regulations and requirements of the Institute, as set out below.

Honours Program

The objective of the Honours program is to equip students with indispensable linguistic tools and to provide, through an interdisciplinary approach, an integrated knowledge of the cultures, historical developments and contemporary social, economic and political systems of the area. The program leads to the degree of Bachelor of Arts with Honours in Central/East European and Russian-Area Studies.

Combined Honours Program

A Combined Honours degree between Central/East European and Russian-Area Studies and the School of Journalism and Communication is available to students already accepted into the Journalism Honours Program.

Course requirements for this degree are planned by the Director of the Institute in consultation with the Director of the School of Journalism and Communication, and are designed to accommodate the students' interests and needs.

Combined Honours programs are also possible in conjunction with other disciplines and are governed by the regulations of the departments concerned.

Further details on these programs may be obtained from the Institute.

Admission Requirements

Admission to the program must be approved by the Institute of Central/East European and Russian-Area Studies and by the Faculty of Social Sciences Committee on Honours. Students with a 65 percent average or better in the OSSD or a C standing in the

Carleton Qualifying-University year may be enrolled in the program in the First year. With the consent of the Institute, students may also enter the program in subsequent years provided they have maintained Honours standing and have completed the program's course requirements to that point.

Course Requirements

A total of 20.0 credits is required for the Honours B.A. in Central/East European and Russian-Area Studies.

All candidates normally are required to take 3.0 credits in the Russian language beyond the introductory level: Russian 36.202 (Intermediate), 36.203 (Grammar), and 36.302 (Advanced). If students wish to take further Russian language courses, Russian 36.307* (Syntax) and 36.308* (Translation) or 36.420* and 36.421* (Russian for International Relations) are advised. Russian 36.120 may be substituted for 36.100 and 36.202. Students normally are expected to complete their language requirements by the end of their Third year. A maximum of 3.0 additional language or literature credits (not counting the three Russian language credits) may be selected as additional components of the candidate's Honours program. Students planning to apply to the graduate program in the Institute are strongly urged to take Russian 36.307* and 36.308* in preparation for satisfying the Russian language requirement for the M.A.

Each year courses must be chosen in consultation with the Honours Adviser. In the First year these courses should be from the 100-level or from higher-level courses open to First-year students. These courses should be selected as preparation for more specialized Central/East European and Russian-Area Studies offered in various disciplines. Introductory courses in economics, European history and political science (as well as other introductory courses in the social sciences) therefore normally are taken at this stage.

In the following three years, candidates must select 8.5 additional credits, (including at least 5.0 from departments other than Russian, and representing no fewer than three different disciplines) from the area-related courses offered by participating departments and listed below. The following courses are regarded as forming the core of the Institute's undergraduate area studies program: Economics 43.370*, History 24.260 or 24.360, Political Science 47.320 and 47.314 and all are normally required of all candidates for the degree. One of these 8.5 credits must be either East European Studies 55.498 or an approved Fourth-year seminar given by the Institute or by one of the participating departments.

3.5 additional credits are to be selected with the approval of either the Honours Adviser or the Director.

Courses Offered by Participating Departments

Art History

11.422* Topics in Eastern Medieval Art

Russian

36.120 Intensive Russian

36.202 Intermediate Russian

- 36.203 Russian Grammar
 36.205★ Written Russian
 36.207 Introduction to Literary Reading
 36.220 Business Russian
 36.260 Russian Literature in English Translation
 — Nineteenth and Twentieth Centuries
 36.301★ Advanced Spoken Russian
 36.302 Advanced Russian
 36.305★ Advanced Written Russian
 36.307★ Russian Syntax
 36.308★ Russian Translation
 36.404 Russian Style and Composition
 36.405 Tutorial: History of the Russian Language
 36.409 Major Authors - Gorky to Solzhenitsyn
 36.420★ Russian for International Relations I
 36.421★ Russian for International Relations II
 36.435★ Tutorial: Special Topic (Literature)
 36.455 Tutorial: Special Topic (Post-1917 Period)
 36.493★ Translation Tutorial I
 36.494★ Translation Tutorial II

Geography

- 45.360★ The Soviet Union and Successor States
 45.361★ Eastern Europe: A Geographic Survey
 45.460★ The Changing Geography of Post-Communist Societies

History

- 24.260 History of Russia and the U.S.S.R.
 24.359★ Habsburg Monarchy 1526-1918
 24.360 History of the U.S.S.R.
 24.361★ The Russian Empire
 24.365★ The Soviet Union in International Affairs
 from Comintern to Cold War
 24.366★ Modern East Central Europe
 24.385★ Twentieth Century China
 24.460 Selected Problems in Russian History
 24.461 Selected Problems in Soviet History
 24.560 Revolutionary Russia, 1898-1921
 24.589 Historiography (section dealing with Modern Russia)

Economics

- 43.370★ The Economics of Transition
 43.486★ Comparative Economic Systems I
 43.487★ Comparative Economic Systems II
 43.586★ Comparative Economic Systems I
 43.587★ Comparative Economic Systems II

Law

- 51.488★ Socialist Legal Systems

Philosophy

- 32.220 Introduction to Marxist Philosophy

Political Science

- 47.314 Politics in Central and Eastern Europe
 47.320 Government and Politics in Soviet Successor States
 47.431★ Marxist Thought
 47.432★ Contemporary Marxism
 47.461★ Foreign Policies of Soviet Successor States
 47.514★ The Transition from Communism
 47.515★ Post-Communist Politics in East Central Europe

- 47.516★ Selected Problems in the Politics of Soviet Successor States
 47.586★ Strategic Thought and Issues in International Security

International Affairs

- 46.538★ International Economics: Policy and Theory
 46.582★ Political Economy of East-West Relations
 46.584★ International Relations in Europe

Sociology

- 53.584★ Modern Marxist Theory

East European Studies

- 55.400★ Modern Polish Society
 55.403★ Soviet and Russian Military History and Affairs
 55.405★ Environmental Problems and Politics in East/Central Europe and Eurasia
 55.406★ The Business Environment in East/Central Europe and the Soviet Successor States
 55.407★ Social and Political Discourse in Russia
 55.408★ Nationalism and Ethnic Conflict in Eastern Europe
 55.409★ Development of the Russian North
 55.410★ Nation-Building in Central and Eastern Europe
 55.411★ The Balkans
 55.490 Tutorial in Central/East European and Russian-Area Studies
 55.491★ Tutorial in Central/East European and Russian-Area Studies
 55.492★ Tutorial in Central/East European and Russian-Area Studies

Note:

Not all of the foregoing courses are offered in any given year, and not all combinations of courses are possible. See departmental listings for further details.

Academic Standing

Students must maintain Honours standing as prescribed by the general requirements of the Faculty of Social Sciences.

Graduate Program

The Institute offers an interdisciplinary Master of Arts program in Central/East European and Russian-Area Studies with the participation of faculty from the Departments of Art History, Economics, Geography, History, International Affairs, Law, Political Science, Russian, Sociology and the School of Business as well as invited specialists from other universities and visiting scholars from the former Soviet Union and East/Central Europe. It is designed for students wishing to acquire specialized knowledge of the area, and proficiency in Russian, before proceeding towards a doctoral degree in one of the disciplines represented in the program, either at Carleton or another university. The program is also suitable for students aspiring to a professional, business or government career which requires knowledge of the area. For details,

consult the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

East European Studies 55.400★

Modern Polish Society

The rise and victory of Solidarity, and its disintegration; formation of a new independent state and society.

Prerequisite: Permission of the Institute.

Seminar three hours a week.

East European Studies 55.403★

Soviet and Russian Military History and Affairs

An examination of Soviet and Russian military history and affairs, from 1917 to the present, with special focus on Moscow's traditional integration of the military within a larger composite elite; its view of power and strategy as extending beyond the military, to include also socio-economic, ideological and other components—which may, in certain contexts, take precedence; combined arms; and deterrence, nuclear and post-nuclear.

Prerequisite: Permission of the Institute

Seminar three hours a week.

East European Studies 55.405★

Environmental Problems and Politics in East/Central Europe and Eurasia

This seminar examines the nature of environmental problems in Central/Eastern Europe and the former Soviet republics. Ideological bases for their treatment, political forces active in shaping environmental policy, economic reform and the environment, and policy responses at the international, national and local levels are studied.

Also offered at the graduate level, with additional or different requirements, as East European Studies 55.505★, for which additional credit is precluded.

Prerequisite: Political Science 47.320 or equivalent or permission of the Institute.

Seminar three hours a week.

East European Studies 55.406★

The Business Environment in East/Central Europe and the Soviet Successor States

An examination of the economic and legal environment in which new businesses are emerging in the region and the practical problems which face business ventures. Themes will include regulatory structures, patterns of foreign trade, market characteristics, scientific and technological base, and business culture. (Also listed as Business 42.464★). Prerequisite: Economics 43.370★ or Business 42.361★, or permission of the Institute.

Seminar three hours a week.

East European Studies 55.407★

Social and Political Discourse in Russia

This seminar will involve analysis of materials from

the Russian-language media dealing with contemporary social and political issues. Most course readings will be in the Russian language. Lectures and at least a portion of seminar discussion will be in Russian.

Also offered at the graduate level, with additional or different credit requirements, as East European Studies 55.507★, for which additional credit is precluded. Prerequisites: Permission of the Institute, with appropriate facility in the Russian language.

East European Studies 55.408★

Nationalism and Ethnic Conflict in Eastern and Central Europe

This seminar deals with nationalism and the ethnic structure in East/Central Europe and the Soviet successor states. Building on an historical examination of the social, economic, linguistic and ideological components of ethnicity, the course proceeds to focus on the trends and politics of ethnicity, and the role minorities today.

Also offered at the graduate level with additional or different requirements, as East European Studies 55.508★, for which additional credit is precluded. Precludes additional credit for East European Studies 55.401★ or 55.404★ (if taken before 1995-96).

Prerequisite: Permission of the Institute.

Seminar three hours a week.

East European Studies 55.409★

Development of the Russian North

The purpose of this seminar is to give an overview of the economic, social and political development of the Russian North. Development is analyzed in both historical and contemporary contexts.

Also offered at the graduate level, with additional or different requirements, as East European Studies 55.509★, for which additional credit is precluded. Precludes additional credit for East European Studies 55.402★ (if taken before 1995-96).

Prerequisite: Permission of the Institute.

Seminar three hours a week.

East European Studies 55.410★

Nation-Building in Central and Eastern Europe

With the collapse of the communist system, countries in the region have regained autonomy and independence in pursuing their own paths of development, introducing increasing national diversity in the region. In this course, the process of nation-building is examined in a particular country or set of countries in the region, taking account of historical experience and present challenges. The country or countries studied may vary from year to year.

Also offered at the graduate level, with additional or different requirements, as East European Studies 55.510★, for which additional credit is precluded.

Prerequisites: Political Science 47.320 or 47.314, History 24.360, and permission of the Institute.

Seminar three hours a week.

East European Studies 55.411★

The Balkans

This course will examine the historical and political background to the establishment and development of Albania, Bulgaria, Romania and Yugoslavia as independent states, the relations, rivalries and frictions within and between them, and their differing paths of transition from communist rule. Some emphasis will be given to Yugoslavia, its formation, the nature of its

restructuring after World War II, the origins of its component peoples, the political and economic factors which culminated in its disintegration in 1991, and international aspects of the Yugoslav crisis.

Prerequisites: Political Science 47.314 or 47.320, or History 24.360 and permission of the Institute.

Seminar three hours a week.

East European Studies 55.490

Tutorial in Central/East European and Russian-Area Studies

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

East European Studies 55.491 ★

Tutorial in Central/East European and Russian-Area Studies

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and

agreement of the instructor.

Prerequisite: Permission of the Institute.

East European Studies 55.492 ★

Tutorial in Central/East European and Russian-Area Studies

Tutorials or reading courses on selected topics may be arranged with the permission of the Institute and agreement of the instructor.

Prerequisite: Permission of the Institute.

East European Studies 55.498

Honours Essay

Open to students in their Fourth year who have maintained a *B+* average in East European Studies courses and who have received the permission of the Institute. The subject of the research will be selected in consultation with the Institute and a supervisor will be assigned. An oral defence of the essay is required.

(Science)

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Academic Administration

Chair
J.S. Wright

Supervisor of Graduate Studies
R.J. Crutchley

Adviser of Undergraduate Studies
R.A. Shigeishi

Teaching Staff

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J.W. ApSimon
G.W. Buchanan
B.R. Hollebone
P. Kruus
K.B. Storey
C.S. Tsai
D.C. Wigfield
J.S. Wright

Associate Professors
A.D. Bawagan
P.H. Buist
R.J. Crutchley
E.P.C. Lai
R.A. Shigeishi
Z.Y. Wang
R.H. Wightman

Instructor
R.C. Burk

*Natural Sciences and Engineering Research Council
University Research Fellow*
R.J. Crutchley

Distinguished Research Professor
C.L. Chakrabarti

Adjunct Research Professors
M.H. Back
R.E. Clement, *Ministry of Environment and Energy,
Ontario*
O.E. Edwards
M. Fingas, *Environment Canada*
D.S. Gamble, *Agriculture and Agri-food Canada*
D.C. Gregoire, *Natural Resources Canada*
P. Handa, *National Research Council Canada*
K.U. Ingold, *National Research Council Canada*
J.A. Koningstein
J.F. Lawrence, *Health Canada*
R.J. Norstrom, *Environment Canada*
J.A. Ripmeester, *National Research Council Canada*
K.W.M. Siu, *National Research Council Canada*
R.E. Sturgeon, *National Research Council Canada*

Sessional Lecturers
D.R. Wiles
P. Wolff

General Information

Students intending to enter a program in Chemistry should have a strong background in mathematics and physics as well as in chemistry. The three-year Major and four-year Honours programs in Chemistry are described below. Students interested in continuing their careers in secondary school teaching, graduate studies or as professional chemists are advised to enrol in the Honours program.

Combined Honours programs in Chemistry and Geology and in Chemistry and Physics are available as described below.

While Combined Honours in Chemistry and Mathematics are not formally available, strong continuation groupings in Mathematics can be arranged under the Honours Chemistry program. Secondary specialization in Biology can be arranged under the Honours Chemistry program, or under the joint program in Honours Biochemistry. A strong Chemistry component is possible also within the degree programs for Integrated Science Studies (see p.346) or Environmental Science (see p.263). In evaluating students for entry with advanced standing, the Department of Chemistry transfers credits but not grades.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 112), in addition to all departmental regulations and requirements as set out below.

The designation of Honours degree awarded for students in the Combined Honours program is determined on the basis of their GPA for all required credits in the two Major subjects as specified in the respective program requirements.

For students in the Honours program, the designation of Honours degree will be determined by a student's GPA on all required Chemistry courses.

Major Program

A total of 10.0 credits is required for graduation after completion of the First-year Science faculty requirements. (See p.108.) These requirements must be completed before continuation into Second year and must include Chemistry 65.100, Mathematics 69.107★, 69.117★, Physics 75.101★ and 75.102★ and one other First-year Science credit.

The total program (including First year) must contain:

1. Chemistry 65.100, 65.210, 65.220, 65.230 and 2.0 credits at the 300-level including Chemistry 65.311★, 65.353★ and at least one of 65.315★, 65.325★ or 65.355★. (Note: Chemistry 65.355★ requires both Chemistry 65.353★ and 65.354★ as prerequisites.)

2. Mathematics 69.107★, 69.117★ and 69.202 or approved equivalents, e.g. 69.207★ and 69.208★;
3. Physics 75.101★ and 75.102★ and 75.236★ or approved equivalents;
4. 0.5 Science Continuation credit not in Chemistry;
5. 1.0 First-year Science credit (as required in the First-year program);
6. 2.0 Arts or Social Science credits (see Faculty of Science regulations);
7. 1.0 additional Science credit. Normally this will be chosen either from non-compulsory Chemistry courses or other science continuation courses.
8. 1.0 free credit.

In addition to the Faculty requirement of a C- average in Chemistry, the Department also requires a grade of C- or better in at least half of all Chemistry courses taken.

It is recommended that candidates choose a course in French, German or Russian as one of their Arts credits.

Honours Program

A total of 15.0 credits is required for the degree after completion of First-year Science requirements. These requirements are the same as for the Major program except that, based on the results of an assessment test and permission of the Chair of the Department, outstanding students may be allowed to take Chemistry 65.220 in the First year instead of Chemistry 65.100. However, the total number of credits required will remain unchanged. In addition to the Faculty requirement of a C+ average in Chemistry, the Department also requires a grade of C+ or better in at least half of all Chemistry courses taken.

The total program (including First year) must contain:

1. Chemistry 65.100, 65.210, 65.220, 65.230, 65.311★, 65.321★, 65.353★, 65.354★, 65.315★, 65.325★, 65.355★, 1.0 credit at the 400-level in Chemistry or Biochemistry 63.310, 0.5 credit at the 300- or 400-level in Chemistry and Chemistry 65.498.
2. Mathematics 69.107★, 69.117★ and 69.202 or approved equivalents, e.g. 69.207★ and 69.208★;
3. Physics 75.101★ and 75.102★; and 75.236★ or approved equivalents;
4. 0.5 Science Continuation credit not in Chemistry;
5. 1.0 First-year Science credit (as required in the First-year program);
6. 2.0 Arts or Social Science credits (see Faculty of Science regulations);
7. 2.0 additional Science credits. Normally these will be chosen either from non-compulsory Chemistry courses or other science continuation courses. Students who wish to broaden and strengthen a non-Science interest by substituting non-Science courses must obtain written permission from the Undergraduate Adviser prior to registration.
8. 1.0 free credit.

Honours Project

All Honours candidates are required, as part of Chemistry 65.498, in the Fourth-year to carry out a substantial project and to write a report to their supervisor. Towards the end of the Third year, prospective candidates should obtain pertinent information from the departmental office. Brief progress reports are to be presented to the supervisor and committee members early in November and February. The deadline for submission of the final typed report is the first Monday in April. Honours students are also expected to attend departmental seminars in their specialty. The report and its defence are heavily weighted in determining the class of Honours awarded. The grade of *In Progress* will be restricted to unusual circumstances and be subject to approval by the Department.

Combined Honours in Chemistry and Geology

Program Advisers: R.A. Shigeishi and G.B. Skippen

A grade of C+ or better in both Chemistry 65.100 and Geology 67.100 and overall Honours standing are required for admittance to the program. Program requirements are as follows:

1. Chemistry 65.100, 65.210, 65.230, 65.353★, 65.354★ and 1.0 Chemistry credit at the 400-level.
2. Geology 67.100, 67.221★, 67.223★, 67.228★, 67.281★, 67.323★, 67.324★ and 1.0 Geology credit at the 400-level;
3. Either Chemistry 65.498 or Geology 67.498. Students should consult their program adviser about selection of this in their Third year;
4. 1.0 Chemistry or Geology credit;
5. Mathematics 69.107★, 69.117★ and 69.202; or approved equivalents;
6. Physics 75.101★ and 75.102★; or approved equivalents;
7. 2.0 Science credits, of which one must be outside Chemistry and Geology;
8. 2.0 Arts or Social Science credits;
9. 1.0 free credit.
10. A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in one of French, German or Russian.

A typical program is as follows:

First Year

Chemistry 65.100;
Geology 67.100;
Mathematics 69.107★ and 69.117★
Physics 75.101★ and 75.102★;
1.0 Arts or Social Science credit.

Second Year

Chemistry 65.210 and 65.230;
Geology 67.221★, 67.223★, 67.228★ and 67.281★;
Mathematics 69.202.

Third Year

Chemistry 65.353★ and 65.354★;

Geology 67.323★ and 67.324★;
1.0 Chemistry or Geology credit;
1.0 Science credit;
1.0 Arts or Social Science credit.

Fourth Year

Chemistry 65.498 or Geology 67.498;
1.0 Chemistry credit at the 400-level;
1.0 Geology credit at the 400-level;
1.0 Science credit;
1.0 elective credit.

Combined Honours in Chemistry and Physics

Program Advisers: R.A. Shigeishi and J.C. Armitage

A total of 15.0 credits are required for the degree after completion of the First-year Science requirement. A grade of C+ or better in each of Chemistry 65.100 and Physics 75.101★ and 75.102★, together with overall Honours standing is required for entry into this program.

First Year

Physics 75.101★ and 75.102★;
Chemistry 65.100;
Mathematics 69.107★ and 69.117★;
and 2.0 credits of Arts or Social Sciences or free elective (see Note);
or Mathematics 69.102 and 69.112;
and 1.0 credit of Arts or Social Sciences or free elective (see Note);

Second Year

Physics 75.211★, 75.222★, 75.235★, 75.262★;
Chemistry 65.210;
Mathematics 69.207★, 69.208★, 69.217★ and 69.241★ (if Mathematics 69.107★ and 69.117★ were taken in First year);
or Mathematics 69.208★ and 69.241★ and 1.0 credit in Arts or Social Sciences or free elective (if Mathematics 69.102 and 69.112 were taken) (see Note);

Third Year

Physics 75.236★, 75.307★ (or 75.308★) and 75.371★;
Physics 75.387★ and 75.388★ (or Mathematics 69.375★ and 69.307★);
Chemistry 65.220, 65.311★, 65.312★ and 65.353★;

Fourth Year

Physics 75.338★ and 75.477★
Chemistry 65.315★ and 65.354★;
Two of Chemistry 65.410★, 65.412★ or 65.480★;
One Honours Project;
1.0 credit Arts or Social Science or free elective;
(Physics 75.478★ is recommended.)

Note: 2.0 credits in Arts or Social Science must be completed by the end of the program.

Graduate Program

The Department of Chemistry offers studies leading to the degree of Master of Science and to the degree of Doctor of Philosophy. For further details consult the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions* and *Class Schedule* booklet published in the summer.

Note:

Under special circumstances, students not having the indicated prerequisites may register for courses by obtaining permission of the Department; this normally means permission of the instructor for that course.

A breakage deposit of \$25.00 (potentially refundable) will be levied for most laboratory courses.

Chemistry 65.010

Introductory Chemistry

An introductory course emphasizing the fundamental laws and principles of chemistry. Accurate working of numerical problems forms an important part of the course. The laboratory course is designed to teach fundamental techniques and to give familiarity with some physical and chemical properties of a selected group of substances.

Precludes additional credit for OAC Chemistry.

Prerequisite: Ontario Grade 11 Chemistry or equivalent.

Lectures three hours a week, laboratory three hours a week.

Chemistry 65.100

General Chemistry

Solution equilibria, acid and base chemistry; electronic structure of atoms; energy states and spectra; descriptive chemistry and periodic properties of the elements; the structure of covalent and ionic substances; energy relationships and theories in bonding, equilibria, and rates of reactions. The laboratory course gives training in fundamental techniques and methods of experimental work in analysis, synthesis and other aspects of chemistry.

Precludes additional credit for Chemistry 65.111★.

Prerequisites: OAC in Calculus and Chemistry, or equivalent. This course is intended for students in all programs who plan to take further chemistry courses. Lectures three hours a week, laboratory three hours a week.

Chemistry 65.103★

The Chemistry of Food, Health and Drugs

A course describing aspects of chemistry relating to food, food additives, drugs (both illicit and beneficial) and their relation to metabolism and health. Topics may include: proteins, carbohydrates, fats, drugs, food additives, vitamins and cofactors, enzymes, steroids, electrolyte and pH balance, trace elements. Designed for students in the Arts and Social Science Faculties. Available only as a free option for Science students. Course enrolment may be limited.

Prerequisite: A course in Chemistry (e.g. Ontario Grade 11).

Lectures three hours a week.

Chemistry 65.107

The Chemistry of Art and Artifacts

A non-mathematical course designed for archaeolo-

gists and historians dealing with the deterioration and preservation of artifacts and works of art. This course treats the nature and reactions of chemical substances such as stone, metal, wood, and painting materials; modern methods of studying materials and their deterioration; methods of arresting deterioration. Guest lectures and visits to local laboratories and other sites will be arranged.

Prerequisite: At least one year of High School Chemistry is recommended.

Chemistry 65.111★

Chemistry for Engineering Students

This course is designed to familiarize students with chemical principles applicable to engineering problems. Topics include atomic structure, the periodic table, chemical bonding, molecular structure, chemical thermodynamics, chemical equilibrium, chemical kinetics, catalysis, properties of electrolytic solutions, galvanic and electrolytic cells, fuel cells, and corrosion. The laboratory course is designed to give skill in, understanding of, and appreciation of the most important basic techniques and methods used in experimental chemical work. This course is not a prerequisite for further chemistry courses. Individual students wishing to take further chemistry courses will, however, be considered on their merits.

Precludes additional credit for Chemistry 65.100.

Prerequisites: OAC in Calculus and Chemistry, or equivalent.

Lectures three hours a week, laboratory three hours a week.

Chemistry 65.210

Physical Chemistry

An introduction to the principles of thermodynamics. Development of thermodynamic equations and their application to phase equilibria, biochemical processes, chemical equilibria, electrochemistry, transport properties and chemical kinetics. A brief introduction to Fortran programming. Any knowledge of Fortran or other program language would be useful.

Students presenting both Chemistry 65.210 and 65.220 will not be able to receive additional credit for 65.280★. Students in the B.Sc. program with Chemistry 65.210 will only be able to use 65.280★ in the free elective category.

Prerequisites: Chemistry 65.100; Mathematics 69.107★ and 69.117★; OAC Physics or Physics 75.105; or their equivalents.

Lectures three hours a week, problems one hour a week, laboratory three hours a week.

Chemistry 65.220

Organic Chemistry

Structure, synthesis and reactions of the main functional groups using both aliphatic and aromatic examples and emphasizing a mechanistic approach. Elementary stereochemistry. Biologically and industrially important molecules are used as examples whenever possible. The laboratory includes transformations and characterization of selected functional groups as well as introductory spectroscopy.

Students presenting both Chemistry 65.210 and 65.220 will not be able to receive additional credit for 65.280★. Students in the B.Sc. program with Chem-

istry 65.220 will only be able to use 65.280★ in the free elective category.

Prerequisite: Chemistry 65.100.

Lectures three hours a week, laboratory three hours a week.

Chemistry 65.230

Analytical Chemistry

Introduction to analytical chemistry. Understanding of principles and methods of chemical analyses. Knowledge of instruments and their applications. Data treatment. Evaluation and interpretation of results. Solving chemical problems. General knowledge of why certain analyses are done. Qualitative identification and quantitative determination of both atomic and molecular species. The laboratory provides hands-on experience and training in techniques.

Prerequisites: Chemistry 65.100, Mathematics 69.107★ and 69.117★ or equivalent.

Lectures three hours a week, laboratory three hours a week.

Chemistry 65.231★

Analytical Chemistry

A half-credit course for non-Chemistry Majors on the theory and practice of gravimetric, titrimetric and instrumental analysis. Emphasis is placed on experimental techniques required for analysis of biological and environmental samples.

Precludes additional credit for Chemistry 65.230.

Prerequisites: Chemistry 65.100 or 65.111★, Mathematics 69.107★ and 69.117★, or equivalents.

Lectures and problems three hours a week, laboratory three hours a week.

Chemistry 65.280★

Foundations for Environmental Chemistry

This course provides a basis in those aspects of chemistry fundamental to the understanding of the environment through a discussion of topics such as: the physico-chemical processes governing the composition of the atmosphere and natural waters; the detection of common pollutants and their chemical properties; and the recycling of elements in the biosphere. An accompanying laboratory component illustrates these aspects of chemistry. This is a limited enrolment course; therefore top priority will be given to students registered in the Environmental Science program.

Students presenting both Chemistry 65.210 and 65.220 will not be able to receive additional credit for Chemistry 65.280★. Students in the B.Sc. program with either Chemistry 65.210 or 65.220 will only be able to use Chemistry 65.280★ in the free elective category.

Prerequisites: Chemistry 65.100, or 65.111★; and Mathematics 69.107★ or equivalents.

Lectures three hours a week, laboratory three hours a week.

Chemistry 65.311★

Quantum Chemistry I

Hamilton's equations of motion. Postulates of quantum mechanics. Schrodinger wave equation. Particle-in-a-box, tunneling, uncertainty principle. Harmonic oscillator and vibrational spectra. Rigid rotor and rotational spectra. Hydrogen atom, atomic spectra, magnetic effects. Hydrogen molecular ion and molecular orbitals.

Prerequisites: Chemistry 65.210 and Mathematics

69.202, or equivalent.

Lectures and problems three hours a week.

Chemistry 65.312★

Quantum Chemistry II

This course is a continuation of Chemistry 65.311★ and introduces statistical thermodynamics. Specific topics covered: approximation to the Schrodinger equation, many-electron atoms, term symbols, diatomic molecules, selection rules for transitions, introduction to statistical thermodynamics, Boltzmann distribution, canonical ensemble, partition functions, Fermi-Dirac and Bose-Einstein statistics.

Prerequisite: Chemistry 65.311★.

Lectures three hours a week.

Chemistry 65.315★

Experimental Physical Chemistry

A laboratory-based course designed to acquaint students with advanced concepts in physical chemistry and the use of more advanced physico-chemical techniques in other areas of chemistry. Students are responsible for literature surveys, acquisition of theoretical background, design of experimental procedures and mathematical analysis of data.

Prerequisites: Chemistry 65.210 and at least one of 65.220 or 65.230. Prerequisite or co-requisite: Chemistry 65.311★.

Note: Withdrawal from Chemistry 65.311★ will require deregistration from Chemistry 65.315★.

Laboratory and seminars four hours a week.

Chemistry 65.321★

Advanced Organic Chemistry I

Instrumental methods for determining organic structures. Selected organic reactions with emphasis on mechanisms and reactive intermediates.

Prerequisite: Chemistry 65.220 or equivalent.

Lectures three hours a week.

Chemistry 65.322★

Advanced Organic Chemistry II

Continued mechanistic survey of additional organic reactions with emphasis on synthetic usefulness and stereochemistry. Interspersed with selected topics such as instrumental methods, photochemistry, literature of organic chemistry, natural and synthetic polymers, heterocycles, terpenes and alkaloids.

Prerequisite: Chemistry 65.321★ or equivalent.

Lectures three hours a week.

Chemistry 65.325★

Experimental Organic Chemistry

A laboratory-based course including advanced concepts and techniques in organic synthesis, structure determination, and the rates and mechanisms of reactions. Students are responsible for literature surveys, acquisition of theoretical background, and design of experimental procedures.

Prerequisite: Chemistry 65.220.

Prerequisite or co-requisite: Chemistry 65.321★ or Biochemistry 63.310.

Note: Withdrawal from Chemistry 65.321★ will require deregistration from Chemistry 65.325★.

Laboratory four hours a week.

Chemistry 65.353★

Inorganic Chemistry I

An introduction to quantum theory and atomic struc-

ture. The periodic system, chemistry of the p-block, transition and lanthanide elements. Symmetry and chemical bonds. Structure and energetics.

Prerequisites: Chemistry 65.210 and 65.230. Chemistry 65.311★ concurrently is recommended.

Lectures three hours a week.

Chemistry 65.354★

Inorganic Chemistry II

The electronic structure of molecules. Topics to be chosen from: chemistry of co-ordination compounds; nomenclature, isomerism, stability constants, bonding, thermodynamics and kinetics, chemistry of organometallic compounds, bioinorganic chemistry — the role of transition metals in nature.

Prerequisite: Chemistry 65.353★.

Lectures three hours a week.

Chemistry 65.355★

Experimental Inorganic and Analytical Chemistry

A laboratory-based course including advanced concepts and techniques in inorganic synthesis, structure determination and analytical chemistry. Students are responsible for literature surveys, acquisition of theoretical background, design of experimental procedures and mathematical analysis of data.

Prerequisites: Chemistry 65.210 and 65.230.

Prerequisite or co-requisite: Chemistry 65.353★ and 65.354★.

Note: Withdrawal from or a final grade of *F* or *FNS* in Chemistry 65.353★ will require deregistration from Chemistry 65.355★.

Laboratory four hours a week.

Chemistry 65.370★

Industrial Applications of Chemistry

A course illustrating how chemistry is utilized in industry in conjunction with other disciplines. A variety of industries are covered, e.g. the fertilizer, electrochemical, metallurgical, petrochemical, plastics, pulp and paper, and pharmaceutical industries. The discussion of these industries will be used to illustrate the interaction of chemistry with a variety of factors: economic, political, engineering, materials, environmental, health, legal, etc. Several guest lecturers from industry will participate.

Prerequisite: Chemistry 65.210 or Chemistry 65.280★.

Chemistry 65.380★

The Chemistry of Environmental Pollutants

This course focuses on specific pollutants of current interest. These may be inorganic (e.g., acid rain, lead, mercury) or organic (dioxins, PCBs, freons, pesticides, etc.). Discussion may include: their industrial sources; whether produced deliberately or accidentally; the use pattern; concentrations involved; their known effects on the environment and human health; chemistry involved in these effects; analytical methods to determine their concentration; current regulation of these compounds in Canada and elsewhere.

Prerequisite: Chemistry 65.220 or 65.280★.

Lectures three hours a week.

Chemistry 65.410★

Advanced Topics in Physical Chemistry I

This course and 65.412★ are intended to complete the core program in the areas of physical or theoretical chemistry. Principles of Group Theory as applied

to chemistry. Point groups, character tables, symmetry orbitals, molecular orbitals, aromaticity, allowed and forbidden reactions, sandwich complexes. Selection rules in spectroscopy. Molecular vibrations. Prerequisites: Chemistry 65.312★ or Physics 75.362★.
Lectures three hours a week.

Chemistry 65.412★

Advanced Topics in Physical Chemistry II

Statistical thermodynamics, energy states, equilibrium, partition functions for diatomic molecules. Chemical kinetics: rate laws, solution of differential equations, transition state theory, bimolecular reactions in gases and in solution, chain reactions, catalysis, atmospheric chemical reactions and photochemistry. Prerequisite: Chemistry 65.312★.
Lectures and seminars three hours a week.

Chemistry 65.413★

Colloid and Surface Chemistry

Properties and stability of colloidal systems, theories of adsorption, heterogeneous catalysis, and interfacial phenomena. Prerequisite: Chemistry 65.210.

Chemistry 65.422★

Advanced Topics in Organic Chemistry I

This course and 65.423★ are intended to complete the core program in the area of organic chemistry. Instrumental analysis of organic compounds. Methods of analysis for, and structure determination of complex organic molecules. Topics include Fourier transform, infrared and ¹³C NMR spectroscopy, ultraviolet spectroscopy, mass spectrometry and methods for relative and absolute stereochemical determination. Also offered at the graduate level, with additional or different requirements, as Chemistry 65.547, for which additional credit is precluded. Prerequisite: Chemistry 65.321★.
Lectures and seminars three hours a week.

Chemistry 65.423★

Advanced Topics in Organic Chemistry II

Synthetic organic chemistry. The application of reactions to the synthesis of organic molecules. Emphasis on design of sequences, new reagents, and stereoselectivity. Prerequisites: Chemistry 65.321★ and 65.322★.
Lectures and seminars three hours a week.

Chemistry 65.424★

Organic Polymer Chemistry

Introduction to basic principles of polymer chemistry, industrial and synthetic polymers, different types of polymerization and polymer characterization. This is followed by a series of selected topics to cover some important polymers with emphasis on the synthesis, such as commodity plastics, engineering thermoplastics and specialty polymers. Also offered at the graduate level, with additional or different requirements, as Chemistry 65.546, for which additional credit is precluded. Prerequisites: Chemistry 65.321★ or equivalent.
Lectures three hours a week.

Chemistry 65.431★

Advanced Topics in Analytical Chemistry I

This course and 65.432★ are intended to complete the core program relevant to the areas of analytical chemistry, environmental chemistry or toxicology. Trace and ultratrace analytical chemistry. Sampling and sample preservation. The problems of the blank. Trace and ultratrace analysis. Analysis of ultrapure material. Atomic absorption, atomic fluorescence and atomic and molecular emission spectroscopy. Simultaneous and sequential multi-element analysis. Prerequisites: Chemistry 65.210 and 65.230.
Given in alternate years with Chemistry 65.432★.

Chemistry 65.432★

Advanced Topics in Analytical Chemistry II

Solutions and separations in analytical chemistry. Stability of aqueous solutions of standards and samples. Complex formation, multi-step and competing equilibria and their application to the design of selective methods of separation and determination. Electroanalytical techniques. Electroanalytical chemistry of aqueous solutions. Phase equilibria and solvent extraction. Prerequisites: Chemistry 65.210 and 65.230. Text: Laitinen and Harris, *Chemical Analysis, Second Edition*. Given in alternate years with Chemistry 65.431★.
Lectures and seminars three hours a week.

Chemistry 65.452★

Radiochemistry

A study of nuclear stability and decay; chemical studies of nuclear phenomena. Applications of radioactivity. Prerequisites: Chemistry 65.210, 65.230 and 65.353★ or permission of the Department. Reference text: Friedlander, Kennedy, Macias and Miller, *Nuclear and Radiochemistry*. Lectures and seminars three hours a week.

Chemistry 65.453★

Advanced Topics in Inorganic Chemistry I

This course and 65.454★ are intended to complete the core program in inorganic chemistry. Static and dynamic structures of inorganic coordination compounds. Structure of nuclear positions and the electronic ground state. Group-theoretical description of vibrational and electronic excited states. Ligand-field, parameters, bond covalence, prediction of inorganic reaction paths. Precludes additional credit for Chemistry 65.450★ (no longer offered). Prerequisite: Chemistry 65.354★ or equivalent.
Lectures three hours a week.

Chemistry 65.454★

Advanced Topics in Inorganic Chemistry II

Reactivity of inorganic coordination compounds. Thermodynamic and kinetic factors affecting reactivity. Industrial and biochemical processes catalyzed by metal coordination compounds. Experimental methodologies, data analysis and rate law evaluation used to obtain reaction mechanisms leading to improved methods of catalysis. Prerequisite: Chemistry 65.354★ or equivalent.
Lectures three hours a week.

Chemistry 65.470★

Special Topics in Chemistry

This course will be offered occasionally when demand is sufficient. It may cover a topic of current interest, or may be offered by an adjunct professor in a particular area of expertise. The subject matter may therefore be in any branch of chemistry. Only one special topics course may be presented for credit.

Prerequisite: Permission of the Department.

Chemistry 65.480★

Atmospheric Chemistry

The topics to be covered in this course include: properties of the natural atmospheric constituents; biogeochemical cycles involving gases; chemical reactions in the atmosphere; anthropogenic atmospheric pollutants (e.g., chlorofluorocarbons, sulphur and nitrogen oxides, photochemical smog, etc.), their sources and their effects on the biosphere. Fundamentals of the structure of the relevant molecules are discussed to explain their spectral properties and chemical reactivities. Some fundamentals of gas properties are also included. Experimental methods for studying the atmosphere are covered briefly.

Prerequisite: Chemistry 65.210 or 65.280★.

Lectures three hours a week.

Chemistry 65.498

Research Project and Seminar

Senior students in Honours Chemistry carry out a research project under the direction of one of the members of the Department. A written report and an oral presentation of the work are required before a grade can be assigned. Students must successfully complete at least two of Chemistry 65.315★, 65.325★ and 65.355★ before beginning their Chemistry 65.498 project, unless they have obtained the express consent of the Department.

Laboratory and associated work equivalent to at least eight hours a week for two terms.

(Engineering)

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Academic Administration

Chair
J.L. Humar

Teaching Staff

Professor Emeritus
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Professors
A.O. Abd El Halim
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G.A. Hartley
J.L. Humar
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A.M. Khan
K.T. Law
A.G. Razaqpur
J.J. Salinas
T.S. Sridhar
G.T. Suter

Associate Professors
N.M. Holtz
S.J. Kennedy
D.T. Lau

Assistant Professors
W.J. Parker
P. Van Geel

Adjunct Research Professors
D. Bell, *Transport Canada*
M.S. Cheung, *Public Works*
S.C.H. Cheung, *Concordia University*
S.E. Chidiac, *National Research Council Canada*
S.M. Easa, *Lakehead University*
G.Y. Felio, *National Research Council Canada*
W.F. Johnson, *Transport Canada*
R.R. Mayes, *Transport Canada*
B. Persaud, *Ryerson Polytechnic University*
A.P.S. Selvadurai, *McGill University*
O.J. Svec, *National Research Council Canada*
E.W. Wright, *E.W. Wright & Associates*

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

As a result of the transition from the old program to the new program there may be some duplication of course descriptions and alterations in the course numbering.

Engineering 82.104★ Surveying

Surveying principles and practice; measurements of distance, difference in elevation, angles and directions; theory, use and adjustments of principal surveying instruments; theory of errors and weighted measurements; engineering surveys, profile, cross sections, earth-work horizontal and vertical curves; use of rectangular coordinates in surveying; area computation by surveying methods; handling of equipment, note-keeping, and surveying procedures are stressed in the field work. Lectures and field work.

Engineering 82.220★ Mechanics of Materials I

Pin-jointed trusses: forces and stresses in members, safety factor, introduction to design, bolted and riveted connections. Bending and shearing stresses in beams by approximate methods. Stresses in thin-walled cylinders due to internal pressure and torsion. Mohr's circle for stress. Stress-strain relations. Bending stresses in beams. Circular members in torsion. Stress-strain relations in shear. Shearing stresses in beams. Mohr's circle for strain. Introduction to electric resistance strain gauges, principal stresses from strain rosette data. Ultimate loads in bending and torsion. Thermal stresses. Buckling of columns. Prerequisite: Engineering 91.111★. Lectures three hours a week, problem analysis and laboratory three hours a week.

Engineering 82.270★
Introduction to Civil Engineering Materials
Fundamental concepts in the behaviour and uses of traditional and new materials in Civil Engineering applications. Fracture, fatigue, creep, relaxation, corrosion. Structure, characteristics, properties and behaviour of soils, granular materials, asphalt, Portland cement, concrete, metals, wood, and new manufactured materials including polymers, fibre-reinforced composites, high strength concrete and reinforcing steels. Prerequisites: Physics 75.101★, 75.102★, Chemistry 65.111★ and Mathematics 69.104★. Lectures three hours a week, problem analysis and laboratories three hours a week.

Engineering 82.323★
Structural Analysis I
Framed structures: frame types; determinacy and stability; internal force diagrams. Trusses: determinacy and stability. Basic concepts; generalized external and internal forces and displacements; linear elasticity and superposition; work and strain energy; minimum potential energy and Castigliano's theorem. Principles of virtual work and complementary virtual work; calculation of forces and deflections; influence lines; statically indeterminate analysis. Introduction to stiffness analysis. Prerequisite: Engineering 82.220★. Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 82.324★**Introduction to Structural Design**

An introduction to structural design intended to acquaint the student with building systems; bridges; Limit States Design; the design process; the determination of dead, live, snow, rain, wind, earthquake, and crane loads; design for lateral loads; preliminary analyses and the determination of maximum load effects; and an introduction to timber, masonry, concrete and steel design in Canada.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 82.325★**Design of Structural Steel Components**

Design of axially loaded tension and compression members; design of beams in flexure; design of members subjected to combined compression and flexure; design of welded and bolted connections. (Also listed as Architecture 77.316★.)

Prerequisites: Engineering 82.220★ and 82.324★.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 82.326★**Design of Reinforced Concrete Components**

Based on reinforced concrete behaviour in flexure, compression, shear and bond, analysis and design concepts are developed for beams, slabs, columns, walls and footings.

Prerequisite: Engineering 82.220★.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 82.328★**Geotechnical Mechanics**

Origin and classification of soils and rocks. Character of natural soil deposits. Soil water. Seepage and permeability of soils. Principle of effective stress. Stress-deformation and strength characteristics of soils and rocks. Consolidation characteristics of soils. Stress distribution in earth masses. Laboratory testing. (Also listed as Geography 45.424★ and Geology 67.417★.)

Prerequisite: Third-year registration.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 82.334★**Transportation Engineering and Planning**

Transportation within the socio-economic environment. Transportation systems and components. Vehicle motion and flow. Transportation terminals. Operations plans. Transportation costs. Transportation demand. Supply of transportation. Transportation network flows. Environmental impacts. Introduction to planning, management and design process. (Also listed as Geography 45.434★.)

Prerequisite: Third-year registration.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 82.337★**Municipal Engineering**

Introduction to fundamentals of municipal engineering. City management; permits and approvals; water supply, treatment and distribution; sewage collection, treatment and disposal; solid waste management;

snow disposal; protective services.

Prerequisite: Third-year registration.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 82.340★**Introduction to Environmental Engineering**

The ecosystem and the concept of hydrologic and contaminant cycling through the interactive regimes of atmosphere, hydrosphere, lithosphere and biosphere. Environmental perturbations of engineering and industrial activities and types of pollution. Transport models for contaminants in various media. Physical, chemical and biological treatment processes. Environmental impact assessments and methodologies.

Prerequisites: Chemistry 65.111★, Physics 75.101★ and 75.102★.

Note: This course cannot be taken for credit by Environmental Engineering students.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 82.420★**Structural Analysis II**

Review of basic structural concepts. Betti's law and influence lines. Matrix flexibility method. Development of stiffness coefficients. Moment distribution method. Stiffness method of analysis: beams; plane trusses and frames; space trusses and frames. Introduction to the finite element method. (Also listed as Architecture 77.314★.)

Prerequisite: Engineering 82.323★.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 82.421★**Advanced Structural Analysis**

Review of matrix force method, formulation of the matrix stiffness methods; three-dimensional frames; computer analysis of structures; Introduction to finite elements; structural dynamics.

Prerequisite: Engineering 82.420★.

Lectures and tutorials two hours a week, problem analysis three hours alternate weeks.

Engineering 82.422★**Wood Engineering**

Introduction to structural design in timber. Properties and anatomy of wood. Description of wood products. Factors affecting the strength and structural behaviour of wood structures. Strength evaluation and testing. Allowable stresses. Design in bending, compression and combined stresses. Design of trusses, frames, glulam structures, plywood components. Design of structural systems, form work, foundations. Connections and connectors. Care, inspection, maintenance and repair of timber structures.

Prerequisite: Fourth-year registration or permission of the Department.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.427★**Reinforced Concrete Design II**

Prestressed concrete design including pre-tensioned and post-tensioned members, prestressing losses, cable profiles, ultimate strength, shear and diagonal

tension, bond and end block considerations. Introductory concrete bridge design including bridge types, loadings, procedures for single span slab, T-beam and AASHTO girder bridges, diaphragms and bearing design. Basic building design in reinforced and prestressed concrete.

Prerequisite: Engineering 82.432★.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.428★

Geotechnical Engineering

Waterflow through saturated soils. Laplace equation, flow nets, hydraulic instability. Earth pressures; at rest, active and passive conditions. Design of flexible and rigid retaining structures. Elastic equilibrium in soils. Stress distribution in soils. Settlement of foundations. Bearing capacity of footings. Pile foundations, group action, load distribution. Stability of earth slopes.

Prerequisite: Engineering 82.328★.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 82.429★

Highway Engineering

Highway planning, highway location and geometric design. Traffic engineering, highway capacity. Soil classifications, subgrade and base materials, highway drainage. Principles of frost action and applications to highway systems. Structural design methods for rigid and flexible pavements. Highway economics and finance. Maintenance and rehabilitation. Canadian experience.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.430★

Structural Planning in Architecture

The nature of structural planning problems; general criteria in structural planning; functional, technical, economic and form considerations, loads, classification and estimation; building codes, fire resistance requirements; structural systems; various classifications; comparative study; integration of structural systems with other building systems; synthesis, preliminary analysis and evaluation of alternative structural schemes; case studies, (Also listed as Architecture 77.424★.)

Prerequisites: Fourth-year registration, and permission of the Department.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.431★

Foundation Engineering

A critical study of the theories in soil mechanics and their application to the solution of geotechnical engineering problems. Field investigations, laboratory and field testing, special footings, mat foundations, caissons, pile foundations and excavations. Discussion of new methods and current research.

Prerequisite: Engineering 82.428★.

Lectures two hours a week, laboratory three hours alternate weeks.

Engineering 82.432★

Reinforced and Prestressed Concrete Design

Reinforced concrete shear and torsion design by the General Method. Design of two-way slabs by the Direct Design Method. Behaviour and design of slender reinforced concrete columns. Prestressed concrete concepts and materials. Prestressed concrete flexural analysis and design, shear design, anchorage zone design and deflections. Maintenance and repair of concrete structures.

Prerequisite: Engineering 82.326★

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 82.433★

Urban Planning

A systematic approach to urban planning. Urbanization in Canada; urban sprawl; data collection; forecasting; standards; space requirements; land use; zoning; transportation; land development; site selection; land capability; layout; evaluation; housing; urban renewal and new towns. (Also listed as Geography 45.433★.)

Precludes additional credit for Engineering 82.333★. (no longer offered).

Prerequisite: Third-year registration.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.435★

Transportation Geography

Offered in the Department of Geography as Geography 45.442★.

Engineering 82.437★

Hydraulics of Municipal Waste Water Systems

Hydraulics of sewers flowing partially full, flow in sewer junctions and transitions; estimates of amounts of sanitary and storm sewage; design of sewage collection systems; pumps, control, and measuring devices. Hydraulics of treatment processes, disposal problems.

Prerequisite: Fourth-year registration.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.438★

Behaviour and Design of Steel Structures

Building Systems: types of buildings and framing, types of construction, floor framing systems. Design of open web steel joists and steel decks. Design of composite beams, girders and columns. Design of stub girders. Behaviour and design of plate girders. Design for lateral loads — rigid and braced frames: stability and P-delta effect, design of bracing members and frames, lateral drift, moment connections, base plates and anchor bolts, bracing connection design.

Prerequisites: Engineering 82.325★ and Fourth-year registration.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 82.439★

Structural Steel Design II

Bridge systems, review of various steel bridge types, and analysis and design considerations. Case studies of a rigid frame design, and a plate girder bridge design. Design considerations for cold-formed mem-

bers. Computer software for the design of steel structures.

Prerequisite: Engineering 82.438★.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.440★

Construction/Project Management

Systems approach to project planning and control. Analysis of alternative network planning methods: CPM, precedence and PERT. Planning procedure, computer techniques and estimating. Physical, economic and financial feasibility. Implementation feedback and control. Case studies. (Also listed as Business 42.438★)

Prerequisite: Fourth-year registration.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.441★

Hydrology

Hydrologic cycle, stream flow, hydrology of snow, sub-surface water, hydraulics of wells, unit hydrograph and S-curve analysis of flood flows, infiltration, river and reservoir routing, introduction to statistical inference and time series analysis of hydrologic data. (Also listed as Geology 67.419★ and Geography 45.413★.)

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.442★

Integrated Structural Design

Behaviour and design of bridges; historical overview; bridge types; design process and design philosophies; standards and specifications; modeling; analysis; determination of loads; behaviour and design of prestressed and composite plate and box girders. Behaviour and design of buildings; fabrication, erection, construction and architectural considerations; modelling, analysis and design of highrise and irregular-shaped buildings; drawings and specifications. Rehabilitation and restoration of buildings and bridges.

Since 82.442★ replaces 82.427★, 82.430★ and 82.439★, credit for 82.442★ cannot be given if these courses are completed.

Prerequisites: Engineering 82.325★ and 82.326★ and Fourth-year registration.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.443★

Masonry Design

Introduction to structural design in masonry. Properties of masonry materials and assemblages. Behaviour and design of beams, walls and columns. Selected design topics including veneer wall systems and movement considerations. Selected construction topics including workmanship, specifications and inspection. Maintenance and repair of masonry structures. Building design including lowrise and highrise structures. Also offered, at the graduate level with additional or different requirements, as Engineering 82.520★ for which additional credit is precluded.

Prerequisite: Fourth-year registration or permission of the Department.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.444★

Advanced Mechanics

Elastic and inelastic torsion of bars, unsymmetrical bending of beams, beams of composite cross-section, inelastic bending, shear centre, buckling and stability of columns, inelastic buckling, beam-columns, energy methods for deflection calculations and indeterminate structures, failure criteria, fatigue and fracture.

Precludes additional credit for Engineering 82.322★ (no longer offered) and 86.322★.

Prerequisite: Engineering 82.220★.

Lectures three hours a week, problem analysis three hours alternate week.

Engineering 82.450★

Computer Methods in Civil Engineering

The application of computers to the solution of civil engineering problems for the areas of surveying, traffic simulation, fluid distribution and collection, structural analysis and geotechnical engineering (with network and flow analysis being a common theme). Emphasis is placed on the careful design and implementation of reasonably large applications programs. Computing techniques include data structuring, data storage and data bases, and man-machine communication. Effective use of existing software is discussed.

Prerequisites: Engineering 91.266★ and Fourth-year registration.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 82.495★

Professional Practice Seminar

This course is intended to familiarize future professional engineers with current engineering practice and its relationship to other disciplines and to society in general. A sequence of seminars is presented by faculty and external lecturers covering topics such as the Professional Engineers Act, professional ethics, responsibilities of professional engineers and engineering practice appropriate to the discipline. Also included are seminars on the impact of technology on society. The development of communication skills, both oral and written, is emphasized. Grades for this course are *Sat* (satisfactory), or *Uns* (unsatisfactory). Precludes additional credit for Engineering 86.495★, 94.395★ and 97.395★.

Prerequisite: Fourth-year registration.

Seminars three hours a week.

Engineering 82.496★

Special Topics in Civil Engineering

At the discretion of the Faculty, a course dealing with selected advanced topics of interest to Civil Engineering students may be offered.

Prerequisite: Permission of the Department.

Engineering 82.497

Engineering Project

As a part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self-reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc. Each student is required to

submit his or her engineering project proposal to the Chair of the Department of Civil and Environmental Engineering on or before the last day of classes in September.

Students enrolled in the Fourth-year Civil Engineering option may elect to satisfy the project requirements by successfully completing two workshop courses from "77" Series in the School of Architecture with the approval of the Chair of the Department of Civil and Environmental Engineering.

Engineering 81.201★

Process Analysis for Environmental Engineering

Material and energy balances for reacting and non-reacting systems; applications in mining, metallurgy, pulp and paper, power generation, energy utilization; emissions to the environment per unit product or service generated; introduction to life cycle analysis, comparative products and processes.

Prerequisites: Chemistry 65.111★ or equivalent, and Engineering 91.241★; or approval of the Department. Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 81.301★

Environmental Engineering Unit Operations

Survey of Unit Operations in Environmental Engineering; dimensional analysis and dimensionless numbers; agitation and mixing of fluids: the Power Group and power consumption; sedimentation and flotation; flow past immersed bodies, drag coefficients, settling classification; filtration and other mechanical separations; heat transfer and overall heat transfer coefficients; mass transfer and mass transfer coefficients; adsorption and leaching; membrane separations. Laboratory procedures: Settling operations, filtration, aeration.

Prerequisites: Engineering 86.230★, Chemistry 65.231★.

Lectures three hours a week, problem analysis or laboratory three hours alternate weeks.

Engineering 81.302★

Environmental Engineering Systems Modelling

Environmental systems and ecological considerations; engineered systems for pollution abatement; chemical reaction engineering: reaction kinetics, rate data analysis, design and modelling of reactors, single and multiple reactions, ideal and non-ideal reactors, single and multi-parameter models; biochemical reaction engineering: microbiological considerations, monod kinetics, enzyme kinetics, biochemical reactors; introduction to process control. Laboratory procedures: Reactor systems performance: batch, CSTR and PFR.

Prerequisites: Mathematics 69.201, Chemistry 65.111★, Engineering 81.201★.

Lectures three hours a week, problem analysis or laboratory three hours alternate weeks.

Engineering 81.303★

Water Resources Engineering

Distribution of water resources, quantitative hydrology, ground water resources; probability concepts in

water resources; water resources management: optimization, linear programming, dynamic programming.

Prerequisites: Engineering 82.220★, 86.230★, 91.111★.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 81.304★

Contaminant and Pollutant Transport in the Environment

Physical phenomenon governing the transport of contaminants in the environment: diffusion, advection, dispersion, sorption, interphase transfer. Derivation and application of transport equations in air, surface and groundwater pollution; analytical and numerical solutions. Equilibrium partitioning of contaminants among air, water, sediment, and biota.

Prerequisites: Engineering 81.302★, Chemistry 65.280★ (may be taken concurrently), Mathematics 69.375★

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 81.401★

Hazardous Waste Management

Definition and characterization of hazardous waste, applicable legislation; fundamental reactions influencing the fate of hazardous wastes; development of fate and transport equations for hazardous wastes in the environment; management practices associated with generation, handling and disposal of hazardous wastes. Processes for treatment and disposal of hazardous wastes. Remediation of contaminated sites.

Prerequisites: Engineering 81.302★, Engineering 81.304★. Engineering 82.428★ (may be taken concurrently).

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 81.402★

Environmental Geotechnical Engineering

Soil chemistry; ion exchange, mineral solution equilibria, surface area, adsorption, organic content. Landfill design; hydrogeologic principles and water budget, landfill liners, geosynthetics, landfill cover design, quality control and quality assurance; clay-leachate interaction; composite liner design and leak detection; landfill operation: site selection, costs, maintenance, monitoring. Case studies of landfill design and performance. Geotechnical design of environmental control and containment systems.

Prerequisites: Chemistry 65.280★, Engineering 81.304★, 82.328★.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 81.403★

Air Pollution and Emissions Control

Sources, nature and classification of air pollutants; fossil fuel combustion; stoichiometric, thermodynamic, kinetic considerations; particulates; ambient air quality objectives and monitoring; control and measurement of emissions from mobile and stationary sources; indoor air quality. Laboratory procedures: emissions from stationary and mobile

combustion sources, particulate size distribution and control.

Prerequisites: Chemistry 65.280★, Engineering 86.230★, 91.241★.

Lectures three hours a week, problem analysis or laboratory three hours alternate weeks.

Engineering 81.404★

Environmental Planning and Decision Making

Environmental planning: planning procedures, economic and environmental analysis of projects, impact of residuals; environmental quality: development of environmental quality standards for air, water and soil, technology-based effluent and emission standards; environmental management: physical infrastructure for management of standards, effluent release; forecast and survey methodologies: evaluation and quantification of environmental effects, survey techniques for quality assessment; risk assessment: comparative risk assessment, risk analysis, technical and societal risks.

Prerequisites: Engineering 91.380★, Mathematics 69.352★.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 81.405★

Environmental Engineering Unit Processes

Treatment process flow sheets; softening and stabilization; chemical treatment methods, disinfection; biological waste water treatment; waste stabilization ponds, aeration, suspended and fixed film processes, trickling filter and rotating biological contactors; sludge management; anaerobic stabilization, aerobic alternatives for waste stabilization; removal of trace organics/hazardous substances; nutrient removal. Laboratory procedures: activated sludge, anaerobic growth, chemical precipitation, chlorination.

Prerequisite: Engineering 81.301★.

Lectures two hours a week, problem analysis or laboratory three hours alternate weeks.

Engineering 81.406★

Hydrogeology and Groundwater Flow

Theory of flow through porous media; soil characterization, soil properties, anisotropy, heterogeneity, Darcy equation, aquifer hydraulics; contaminant transport in the saturated and unsaturated (vadose) zones; advection, diffusion, dispersion, adsorption, decay, partitioning; multiphase flow; flow in fractured media; in-situ methods for hydrogeologic site characterization; numerical modelling of flow and contaminant transport; finite elements; finite difference, boundary conditions. Case studies and parameter sensitivity.

Prerequisites: Mathematics 69.375★, Engineering 82.328★.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 81.407★

Solid Waste Management

Sources and characterization of solid waste; issues related to reduction in solid waste generation; behaviour of solid waste in a landfill environment; handling of landfill by-product streams; biogas, leachate; alternatives to landfilling of solid wastes; composting, incineration; costs associated with solid waste, public perception.

Prerequisites: Chemistry 65.280★, Engineering 81.302★, 82.337★.

Lectures two hours a week, problem analysis three hours alternate weeks.

Engineering 81.408★

Environmental Impact Assessment

Survey of EIA procedures: regional and global requirements; legislative requirements: Canadian environmental protection laws, international protocols, monitoring and compliance mechanisms; Environmental Impact Statement: framework for EIS, techniques for assessing impacts, prediction and estimation of impacts on air, water and soil quality; environmental audit and compliance: audit procedures, strategies for environmental compliance, documentation and technical reviews; public inquiry procedures and intervenor participation, EIS and licensing; EIA case studies: study and analysis of EIA of selected engineering projects.

Prerequisite: Fourth-year registration in the Environmental Engineering program or approval of the Department.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 81.497

Engineering Project

As a part of the Fourth year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self-reliance, creative ability and engineering judgement. The results may be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc. Each student is required to submit his or her engineering project proposal to the Chair of the Department of Civil and Environmental Engineering on or before the last day of classes in September.

(Arts)

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General Information

The discipline of Classics is divided into three main fields: Latin, Greek and Classical Civilization. By "Latin" and "Greek" are meant works of Latin and ancient Greek literature studied in the original tongue, not in translation; "Classical Civilization" covers all non-linguistic studies in classical antiquity, such as ancient history and literature in translation.

Honours and Pass programs exist in Latin alone and Greek alone, and in Classical Civilization alone. Combined Honours and Combined Pass programs are available in a combination of any two of the three fields, i.e., Latin and Greek, Latin and Classical Civilization, Greek and Classical Civilization.

Combined Honours and Combined Pass programs can also be arranged combining any of the three with work in another department (for example, Religion and Classical Civilization; Latin and French).

Students who plan to continue their studies in Classical Civilization at the graduate level should note that graduate schools require candidates to have taken upper year language courses in Greek and Latin. Therefore, students are advised to consult the Departmental Honours Adviser as early as possible.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Pass Programs

Pass Program in Greek

5.0 Greek credits beyond the 100-level and Classical Civilization 13.290.

Pass Program in Latin

5.0 Latin credits beyond the 100-level and Classical Civilization 13.291.

Pass Program in Classical Civilization

6.0 Classical Civilization credits and 1.0 credit in either Greek or Latin at the 100-level, or the equivalent.

Students must include in the program Classical Civilization 13.209 and either 13.290 or 13.291; the equivalent of 1.0 credit from Classical Civilization 13.321★, 13.322★, and 13.323★; 1.0 credit from Classical Civilization 13.200, 13.312, 13.315, 13.371★, 13.372★, 13.373★; and options in Classical Civilization equivalent to 2.0 credits.

Combined Pass Program within the Department

Greek and Classical Civilization

4.0 Greek credits beyond the 100-level and 4.0 Classical Civilization credits to include 13.209 and 13.290.

Latin and Classical Civilization

4.0 Latin credits beyond the 100-level and 4.0 Classical Civilization credits to include 13.209 and 13.291.

Greek and Latin

4.0 credits beyond the 100-level in both Greek and Latin and either Classical Civilization 13.290 or 13.291.

Combined Pass Program with Another Department

In addition to the requirements of the other department, one of the following will be required:

Greek

4.0 Greek credits beyond the 100-level and Classical Civilization 13.290.

Latin

4.0 Latin credits beyond the 100-level and Classical Civilization 13.291.

Classical Civilization

5.0 Classical Civilization credits. Students must include in the program Classical Civilization 13.209, 13.290 or 13.291 and at least 1.0 credit at the 300-level.

All courses are to be chosen in consultation with the Department.

Honours Programs

Honours Program in Greek

7.0 Greek credits beyond the 100-level and Classical Civilization 13.209 and 13.290.

Honours Program in Latin

7.0 Latin credits beyond the 100-level and Classical Civilization 13.209 and 13.291.

Honours Program in Classical Civilization

9.0 Classical Civilization credits; Greek 15.201 or Latin 16.201; 1.0 credit at the 100-level in the other language.

Classical Civilization courses must include 13.209, either 13.290 or 13.291, 1.0 credit from 13.230, 13.232★, 13.235, 13.330, 13.331★, 13.334★, 13.430; 1.0 credit from 13.200, 13.312, 13.315, 13.371★, 13.372★, 13.373★; 1.0 credit from 13.321★, 13.322★, 13.323★; 1.0 credit from 13.427, 13.428, 13.429; Classical Civilization options equivalent to 3.0 credits.

Combined Honours Program within the Department

Greek and Classical Civilization

6.0 Greek credits beyond the 100-level, 5.0 Classical Civilization credits to include 13.209 and 13.290, and 1.0 credit in Latin at the 100-level.

Latin and Classical Civilization

6.0 Latin credits beyond the 100-level, 5.0 Classical Civilization credits to include 13.209 and 13.291 and 1.0 credit in Greek at the 100-level.

Greek and Latin

Either 12.0 credits beyond the 100-level in Greek and Latin (at least 5.0 credits in each language); or 5.0 credits beyond the 100-level in both Greek and Latin and 2.0 Classical Civilization credits.

Combined Honours Program with Another Department

In addition to the requirements of the other department, one of the following will normally be required:

Greek

6.0 Greek credits beyond the 100-level and Classical Civilization 13.290.

Latin

6.0 Latin credits beyond the 100-level and Classical Civilization 13.291.

Classical Civilization

6.0 Classical Civilization credits to include 13.209, 13.290 or 13.291 and 13.427 or 13.428 or 13.429, and 1.0 credit in either Greek or Latin at the 100-level.

Chemistry of Art and Artifacts

The attention of students interested in archaeology is directed to Chemistry 65.107, The Chemistry of Art and Artifacts. The course, designed for archaeologists and historians dealing with the deterioration and preservation of artifacts and works of art, is strongly recommended by the Department as an option.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

• Greek

Greek 15.105★

Introduction to Classical Greek I

A course for beginners in ancient Greek, designed to give students a grasp of basic grammatical forms and vocabulary (with reference to English derivatives) through the reading of continuous Greek. Lectures and practice periods four hours a week.

Greek 15.106★

Introduction to Classical Greek II

A course for students with some previous knowledge of the language: study of grammatical forms and constructions; acquisition of reading skills. Prerequisite: Greek 15.105★ or equivalent. Lectures and practice periods four hours a week.

Greek 15.115

Beginning Classical Greek

Greek 15.116

Beginning Modern Greek

Greek 15.201

Intermediate Classical Greek

Further study of the language; reading of selected prose and poetry by ancient Greek authors. Prerequisite: Greek 15.106★ or equivalent. Lectures three hours a week.

Greek 15.250★

Translation I

A course designed to improve the students' proficiency in sight translation from Greek and to give practice in translation from English into Greek (prose composition).

Prerequisite: Greek 15.201 or permission of the Department.

Tutorials three hours a week.

Greek 15.305★

Epic I

Introductory readings in Homer's epics. Prerequisite: Greek 15.201 and concurrent registration (or previous credit) in Greek 15.250★ or permission of the Department.

Tutorials three hours a week.

Greek 15.307★

The Philosophers I

Introductory readings in Greek philosophy. Prerequisite: Greek 15.201 and concurrent registration (or previous credit) in Greek 15.250★ or permission of the Department.

Tutorials three hours a week.

Greek 15.350★

Translation II

An advanced sequel to Greek 15.250★.

Prerequisite: Greek 15.250★ or permission of the Department.

Tutorials three hours a week.

Greek 15.405★

Epic II

Further readings in Homer's epics.

Precludes additional credit for Greek 15.315★ (no longer offered).

Prerequisite: Completion of a 300-level course in Greek.

Tutorials three hours a week.

Greek 15.407★

The Philosophers II

Further readings in Greek philosophy.

Precludes additional credit for Greek 15.317★ (no longer offered).

Prerequisite: Completion of a 300-level course in Greek.

Tutorials three hours a week.

Greek 15.490★

Directed Study (Poetry)

Greek 15.491★

Directed Study (Prose)

Other courses to be offered in rotation in coming years are:

Greek 15.301★

The Tragedians I

Greek 15.302★

The Orators I

Greek 15.303★

Comedy I

Greek 15.304★

Lyric and Elegy I

Greek 15.306★

The Historians I

Greek 15.401★

The Tragedians II

Greek 15.402★

The Orators II

Greek 15.403★

Comedy II

Greek 15.404★

Lyric and Elegy II

Greek 15.406★

The Historians II

• **Latin**

Latin 16.105★

Introduction to Latin I

A course for beginners in Latin, designed to give students a grasp of basic grammatical forms and

vocabulary (with reference to English derivatives) through the reading of continuous Latin.

Lectures and practice periods four hours a week.

Latin 16.106★

Introduction to Latin II

A course for students with some previous knowledge of the language: study of grammatical forms and constructions; acquisition of reading skills.

Prerequisite: Latin 16.105★ or equivalent.

Lectures and practice periods four hours a week.

Latin 16.115

Beginning Latin

Latin 16.201

Intermediate Latin

Further study of the language; reading of selected prose and poetry by Latin authors.

Prerequisite: Latin 16.106★ or equivalent.

Lectures three hours a week.

Latin 16.250★

Translation I

A course designed to improve the students' proficiency in sight translation from Latin and to give practice in translation from English into Latin (prose composition).

Prerequisite: Latin 16.201 or permission of the Department.

Tutorials three hours a week.

Latin 16.307★

Letters I

Introductory readings in Latin letters.

Precludes additional credit for Latin 16.217★ (no longer offered).

Prerequisites: Latin 16.201 and concurrent registration (or previous credit) in Latin 16.250★.

Tutorials three hours a week.

Latin 16.308★

Virgil and Epic I

Introductory readings in Roman epic.

Precludes additional credit for Latin 16.218★ (no longer offered).

Prerequisites: Latin 16.201 and concurrent registration (or previous credit) in Latin 16.250★.

Tutorials three hours a week.

Latin 16.350★

Translation II

An advanced sequel to Latin 16.250★.

Prerequisite: Latin 16.250★ or permission of the Department.

Tutorials three hours a week.

Latin 16.407★

Letters II

Further readings in Latin letters.

Precludes additional credit for Latin 16.317★ (no longer offered).

Prerequisite: Completion of 300-level course in Latin.

Tutorials three hours a week.

Latin 16.408★

Virgil and Epic II

Further readings in Roman epic.

Precludes additional credit for Latin 16.318★(no longer offered).

Prerequisite: Completion of 300-level course in Latin.

Tutorials three hours a week.

Latin 16.490★

Directed Study (Poetry)

Latin 16.491★

Directed Study (Prose)

Other courses to be offered in rotation in coming years:

Latin 16.301★

Lyric and Elegy I

Latin 16.302★

Drama I

Latin 16.303★

The Historians I

Latin 16.304★

The Orators I

Latin 16.305★

The Philosophers I

16.306★

Satire I

Latin 16.401★

Lyric and Elegy II

Latin 16.402★

Drama II

Latin 16.403★

The Historians II

Latin 16.404★

The Orators II

Latin 16.405★

The Philosophers II

Latin 16.406★

Satire II

• **Classical Civilization**

Only 1.0 credit may be earned from Classics 13.100, 13.102★ and 13.103★ and 13.119.

For all Classical Civilization courses at or above the 200-level the prerequisite is at least Second-year standing or permission of the Department.

First-year level Classical Civilization courses may not be taken as Classics options by Classical Civilization majors in their Third and Fourth years.

Classical Civilization 13.100

Introduction to Classical Civilization

An introduction to the study of Greek and Roman antiquity and to the discipline of Classics and its methodologies. The culture and society will be set in their historical context and studied through readings

from representative ancient authors (In English translation) and through the art and architecture of the period.

Precludes additional credit for Classical Civilization 13.102★, 13.103★, 13.119.

Lectures two hours a week.

Classical Civilization 13.102★

Introduction to Greek Civilization

An introduction to the study of Greek antiquity and the discipline of Classics and its methodologies. The culture and society will be set in their historical context and studied through readings from representative ancient authors (in English translation) and through the art and architecture of the period.

Precludes additional credit for Classical Civilization 13.100, 13.119.

Lectures two hours a week.

Classical Civilization 13.103★

Introduction to Roman Civilization

An introduction to the study of Roman antiquity and the discipline of Classics and its methodologies. The culture and society will be set in their historical context and studied through readings from representative ancient authors (in English translation) and through the art and architecture of the period.

Precludes additional credit for Classical Civilization 13.100, 13.119.

Lectures two hours a week.

Classical Civilization 13.119

History of the Ancient World

An introduction to the history of ancient Europe and the Near East, with a concentration upon the characteristic political, military and social institutions. Although emphasis is placed upon Greece and Rome, attention is also given both to earlier civilizations and to other contemporary ones.

Precludes additional credit for Classical Civilization 13.100, 13.102★, 13.103★.

Lectures two hours a week.

Classical Civilization 13.200

Classical Mythology

A study of classical mythology, emphasizing its use in Greek and Roman literature and its place in classical art and religion. There is some discussion of classical myths in terms of contemporary interpretations of myth. (All texts used will be in English).

Precludes additional credit for Classical Civilization 13.300 (no longer offered).

Prerequisite: Second-year standing or registration in the B.Hum. program or permission of the Department.

Lectures and discussion three hours a week.

Classical Civilization 13.209

Greek and Roman Literary Genres

A study through English translation of the various genres of Greek and Latin literature, especially those which influenced later European writings: epic, drama, the ode, pastoral poetry, satire. (Also listed as English 18.209.)

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.230

Methods and Techniques of Archaeology

The interrelation of archaeology and anthropology, history, classics, art history, etc. Techniques of field archaeology such as stratigraphy, air photography, surveying, Carbon 14, typology and seriation, underwater archaeology, laboratory analysis: and the organization and administration of a major excavation. Precludes additional credit for Classical Civilization 13.231 (no longer offered).

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.232★

Greek and Roman Art and Archaeology

The art, architecture and archaeology of Greece and Rome. Vase painting, sculpture, Greek and Roman architecture, town planning and analogous arts are studied. (Also listed as Art History 11.210★.)

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.235

Ancient Science and Technology

The development of science and technology in the ancient world and their practical application in such fields as ancient engineering, machinery, metallurgy, transport, building, agriculture and Hippocratic medicine: the position of the craftsman and artisan in society, the attitude of the intellectuals to science and manual labour, and the effect upon technological development of the institution of slavery. This course is suitable for students with no previous knowledge of Greece or Rome.

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.240

Greek Philosophy

Offered in the Department of Philosophy as Philosophy 32.205.

Classical Civilization 13.290

History of Ancient Greece

The history of classical Greece to the conquest of Asia by Alexander with special attention to the development of her characteristic institutions. (Also listed as History 24.290.)

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.291

History of Ancient Rome

The history of ancient Rome, her organization and expansion especially during the late Republic and early Empire. (Also listed as History 24.291.)

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.302

The Later Roman Empire

Offered in the Department of History as History 24.302.

Classical Civilization 13.303

The History of the Byzantine Empire, 527-1453 A.D.

The history of the Byzantine empire from Justinian the Great in the sixth century A.D. to the fall of Constantinople in 1453 A.D. Special attention is given to the cultural, religious and institutional development of Byzantium and their impact on the Slavic, Western European and Islamic countries. (Also listed as History 24.303).

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.305

Sites and Civilization

Classical Civilization 13.312

Greek and Roman Drama

A study in translation of Greek and Roman tragedy and comedy; the origins, character and development of the ancient theatre.

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.315

The Epic in Greece and Rome

A study in translation of epic and its background in Greece and Rome.

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.321★

Studies in Greek History and Institutions

A study of one of the major periods of ancient Greek history. Special topic for 1996-97: Greece in the Fifth Century B.C. (Also listed as History 24.309★).

Prerequisite: Classical Civilization 13.290 or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.322★

Studies in Roman History and Institutions

A study of one of the major periods or themes of the history of ancient Rome. Special topic for 1996-97: The Age of Augustus. (Also listed as History 24.311★.)

Prerequisite: Classical Civilization 13.291 or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.323★

Studies in Ancient History and Institutions

A study of a selected topic in the history of ancient Greece and Rome. (Also listed as History 24.314★.)

Prerequisite: Permission of the Department.

Lectures two hours a week.

Classical Civilization 13.330

Archaeological Field Work

Students will participate for a minimum of five weeks in the excavation of an archaeological site. In addition they will study stratigraphic analysis and the recording and processing of finds. Written reports on specific aspects of the particular excavation are required.

Prerequisites: Classical Civilization 13.230 (old

13.231) and permission of the Department, or permission of the Department.

Classical Civilization 13.331★

Pre-Classical Greek Art and Archaeology

The art, architecture and archaeology of the Minoan, Mycenaean and Cycladic civilizations. With emphasis on vase painting, architecture, small finds and frescoes, the course documents the development of art in the Aegean area down to the emergence of Greece into the historical era around 600 B.C. (Also listed as Art History 11.304★.)

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.334★

Etruscan and Roman Art

Offered in the Department of Art History as Art History 11.310★.

Classical Civilization 13.371★

Studies in Greek Literature

A study of an author or topic in Greek literature. Special topic for 1996-97: Women and Greek Tragedy.

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.372★

Studies in Roman Literature

A study of an author or topic in Roman literature. Special topic for 1996-97: Latin Love Poetry.

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.373★

Studies in Classical Literature

A comparative study of Greek and Roman authors or topics.

Prerequisite: Second-year standing or permission of the Department.

Lectures two hours a week.

Classical Civilization 13.402

Beginnings of Early Medieval Europe and the Near East

Offered in the Department of History as History 24.402.

Classical Civilization 13.427

Selected Topics in Classical History and Literature

A seminar on historical and literary aspects of a particular period of antiquity. Intended for Third- and Fourth-year students. Special topic for 1996-97: Patronage, Propaganda and Culture in Ancient Rome. Prerequisites: Classical Civilization 13.209, one of 13.290, 13.291, 13.321★, 13.322★; and permission of the Department.

Seminar two hours a week.

Classical Civilization 13.428

Selected Topics in Greek and Roman Literature

Intended for Third- and Fourth-year students.

Prerequisites: Classical Civilization 13.209 and permission of the Department.

Seminar two hours a week.

Classical Civilization 13.429

Selected Topics in Greek and Roman History

Intended for Honours students in history and classics who should normally be in the Third- or Fourth-years. (Also listed as History 24.429.)

Prerequisites: Classical Civilization 13.290 or 13.291 or 13.321★ or 13.322★ and permission of the Department.

Seminar two hours a week.

Classical Civilization 13.430

Archaeological Field Work (Advanced)

Students will participate for a minimum of five weeks in a position of responsibility in the excavation of an archaeological site. They will be responsible for excavating and for the recording, processing and analysis of finds. A specialized report on a particular aspect of the excavation is required.

Prerequisites: Classical Civilization 13.330 and permission of the Department.

Classical Civilization 13.490★, 13.491★, 13.492★

Directed Readings and Research

These courses consist of supervised readings and research projects in a specific area of Classical Civilization to be chosen in consultation with the Honours Supervisor.

Prerequisites: Fourth-year Honours standing and permission of the Department.

(Arts)

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A. de Toro (*Universit t Leipzig, Germany*)
H. Sullivan (*University of Missouri, Columbia, U.S.A.*)
P. McCormick (*Universit  d'Ottawa*)
A. Ponzio (*Universit  di Bari, Italy*)
W. Krynski (*Universit  de Montr al*)

General Information

The School of Comparative Literary Studies offers Pass and Honours Programs in Comparative Literary Studies. The general aim of the program is to enable students to apply comparative theory to the study of various literatures. While Pass B.A. students deal with texts in English translation, Honours students are required to take a number of upper level courses of literatures read in the original language.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p.52) and all Faculty regulations (see p.81), in addition to all school regulations and requirements as set out below.

Pass Programs

Pass Program

Pass Program students majoring in Comparative Literary Studies are required to take a minimum of 7.0 credits:

1. 17.100 and 1.0 other credit at the 100-level (in some circumstances a 200-level course may be taken in its place;)
2. 17.200, 17.203 and at least 1.0 other credit at the 200-level;
3. 17.300 and at least 1.0 other credit at the 300-level.

Courses must be selected from the Program Courses listed below and in consultation with the Pass adviser. Students normally choose two major literatures for their areas of concentration, drawing courses from the following departments: Classics, English, French, German, Italian, Russian and Spanish. In addition, students must satisfy the following language requirement: 2.0 full credits in successive language courses (other than English) or equivalent language competence. In addition students are strongly encouraged to take 1.0 credit in a language not already studied.

Combined Pass Programs

Combined Pass Programs are available in Comparative Literary Studies and specific modern and classical literatures, or with other disciplines in Arts and Social Sciences. Students pursuing a Combined Pass program in Comparative Literary Studies are required to take a minimum of 5.0 credits as follows:

1. 17.100;
2. 17.200 and 17.203;
3. 17.300;
4. 1.0 other credit at the 300- level or beyond chosen from the Program courses listed below. Courses must be selected in consultation with the Pass adviser.

In addition, students must satisfy the following language requirement; 2.0 credits in language courses at successive levels (in a language other than English) or equivalent linguistic competence. Also students are strongly urged to take 1.0 course credit in a language not already studied.

Honours Programs

Several Honours programs are available. Course patterns are designed to assure a balance between Comparative Literary Studies and other literatures or disciplines. Combined Honours programs are also available in Comparative Literary Studies and specific modern and classical literatures, or with other disciplines in Arts and Social Sciences. Courses must be selected in consultation with the Honours adviser. The Honours Program in Comparative Literary Studies, including the Combined Honours program, requires that students demonstrate an advanced knowledge of any two of the following languages: English, French, German, Greek, Italian, Latin, Russian, Spanish. Normally this requirement will be fulfilled by taking at least 1.0 credit in a 200-level literature course approved by the School in each of

two of the above mentioned languages. Because of this language requirement, Honours students will normally choose two major literatures for their areas of concentration.

Honours Program

The Honours program requires the following 10.0 credits

1. The 7.0 credits required for the Pass Program;
2. 17.401★ and 17.402★;
3. Either 17.498 (2.0 credits Honours Essay) or 2.0 other credits at the 400-level from the list of Program courses referred to below must be chosen in consultation with the Honours adviser.

Combined Honours Programs

Honours Programs combining Comparative Literary Studies with another subject require 7.0 credits as follows:

1. 17.100, 17.200 and 17.300;
2. 17.401★ and 17.402★
3. 2.0 credits at or above the 300-level chosen from Program courses listed below in consultation with the Honours adviser; 17.499 (1.0 credit Honours Essay) or 1.0 credit at the 400-level chosen from the Program courses listed below in consultation with the Honours adviser.

Graduate Program

The School of Comparative Literary Studies offers studies leading to the degree of Master of Arts and to the Doctor of Philosophy degree. For further details consult the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Comparative Literary Studies 17.100

Introduction to the Comparative Study of Literature

A course designed to introduce the student to the comparative study of literary texts and the theoretical bases for such study. The course will develop critical and theoretical skills useful for reading a variety of original and translated texts drawn from different cultures, genres and historical periods.

Lectures three hours a week.

Comparative Literary Studies 17.200

Introduction to Cross-Cultural Literary Studies

An introduction to the comparative study of literary texts drawn from several contemporaneous cultures or geographic contexts with emphasis on the critical and theoretical issues involved in such readings.

Prerequisite: Comparative Literary Studies 17.100 or equivalent.

Lectures/seminar three hours a week.

Comparative Literary Studies 17.203

Modern Fiction: Representative Texts (Europe/North and Latin America)

A study of representative European texts from the twentieth century. The purpose is to make available a wide range of texts in translation that have particular cross-referential significance.

Prerequisite: Second-year standing.

Lectures two hours plus tutorials one hour a week.

Comparative Literary Studies 17.204★

Japanese Literature (in English Translation)

The course introduces students to the traditions of Japanese literature, and to contemporary writing in Japanese, through the study of representative texts. It provides a complement to the historical and cultural study of the Far East. All texts are read in English translation.

Prerequisite: Second-year standing or higher.

Three hours a week.

Comparative Literary Studies 17.205★

Chinese Literature (in English Translation)

The course introduces students to the traditions of Chinese literature, and to contemporary writing in Chinese, through the study of representative texts. It provides a complement to the historical and cultural study of the Far East. All texts are read in English translation.

Prerequisite: Second-year standing or higher.

Three hours a week.

Comparative Literary Studies 17.300

Introduction to the Historical Study of Literatures

An introduction to the comparative study of literary texts drawn from several historical periods within a unified geographic and cultural context and to critical issues concerning the relationship between literary expression and a range of historical forces and phenomena.

Prerequisite: Comparative Literary Studies 17.200 or equivalent.

Lectures/seminars three hours a week.

Comparative Literary Studies 17.302

Gender and Literature

Topic for 1996-97: Gender and Fiction by Women Writers. This course will sample novels, short stories, autobiographical writing, and poetry by women writing in the 70's and 80's in a variety of cultural settings. The texts will be discussed from a cross-cultural point of view influenced by poststructuralist literary theory, including feminist criticism. Texts by Scandinavian, German, French and Canadian women writers. All texts available in English translation.

Prerequisite: Second-year standing.

Lectures three hours a week.

Comparative Literary Studies 17.361

Studies in Literary Genres

Topic for 1996-97: Modern and Post-Modern Drama. This course traces the development of Modern and Post-Modern theatre in the works of such playwrights as Jarry, Genet, Brecht, Pirandello, Beckett, Ionesco, Pinter, Botho Strauss, Vinàver, Muller. Both continuities and discontinuities are discussed along with other problems that the notions of Modernism and Post-Modernism pose for the theatre and for comparative literary studies.

Prerequisite: A university course in literature or permission of the School.

Lectures three hours a week.

Comparative Literary Studies 17.401 ★

Foundations of Comparative Literature

The history of the discipline of comparative literature is studied, including its beginning in nineteenth-century France, its evolution, and its current status in Europe, the United States and Canada.

Prerequisite: Permission of the School.

Lectures three hours a week.

Comparative Literary Studies 17.402 ★

Theories of Literature

The course focuses on twentieth-century literary theories in the context of comparative studies, providing the student with an over-all view of the theoretical discussion of literature from about 1920 to the present. Included in the study are Russian Formalism, American New Criticism, and such other approaches as the structuralist, semiotic, socio-cultural and hermeneutic.

Prerequisite: Permission of the School.

Note: Students enrolling in this course under the cross-listed number Spanish 38.402 ★ should note the requirements of the Department of Spanish.

Lectures three hours a week.

Comparative Literary Studies 17.403

Selected Topics in Comparative Literature

Studies of a selected topic are available on a tutorial basis, subject to agreement between students and instructors.

Prerequisite: Permission of the School.

Comparative Literary Studies 17.404 ★

Selected Topics in Comparative Literature

Studies of a selected topic are available on a tutorial basis, subject to agreement between student and instructor.

Prerequisite: Permission of the School.

Comparative Literary Studies 17.498

Honours Essay (2.0 credits)

The subject for research is settled in consultation with the School and a supervisor is assigned. A written outline of the project must be submitted to the Honours Committee one week before the last day for course changes. The candidate will be orally examined upon the essay after presentation.

Precludes additional credit for Comparative Literary Studies 17.499.

Prerequisite: Fourth-year Honours standing in Comparative Literary Studies, a GPA of 9.0 or better in Comparative Literary Studies Program courses, and permission of the School.

Comparative Literary Studies 17.499

Honours Essay (1.0 credit)

The subject for research is settled in consultation with the School and a supervisor is assigned. A written outline of the project must be submitted to the Honours Committee one week before the last day of course changes. The candidate will be orally examined upon the essay after presentation.

Precludes additional credit for Comparative Literary Studies 17.498.

a) Literature courses in English or in English translation

Classics

- 13.209 Greek and Roman Literary Genres
- 13.312 Greek and Roman Drama
- 13.315 The Epic in Greece and Rome
- 13.371 ★ Studies in Greek Literature
- 13.372 ★ Studies in Roman Literature
- 13.373 ★ Studies in Classical Literature
- 13.428 ★ Selected Topics in Greek and Roman Literature

English

- 18.101 English and Continental Texts
- 18.206 Children's Literature
- 18.208 Myth and Symbol
- 18.212 ★ Comedy and Satire
- 18.272 Introduction to American Literature
- 18.282 Canadian Literature
- 18.290 ★ Literature and Self
- 18.292 Women and Literature
- 18.296 The Writer, Literature and Society
- 18.300 Literary Criticism from Aristotle to the Present
- 18.312 Old English
- 18.322 Chaucer and the Literature of Medieval England
- 18.332 Renaissance Literature
- 18.334 Shakespeare
- 18.342 Eighteenth-Century Literature
- 18.343 The Novel from Defoe to Scott
- 18.348 Romanticism
- 18.351 Victorian Poetry
- 18.353 The Novel from Dickens to Conrad
- 18.361 Twentieth-Century Poetry
- 18.362 Literature of Modern Ireland
- 18.363 Twentieth-Century British Fiction
- 18.364 Modern Drama
- 18.373 American Fiction
- 18.390 Literature of Existentialism
- 18.392 Scottish Literature
- 18.394 ★ Theatre and Society

Note:

Some English 400-level courses may be available with permission of both the English Department and the School.

Italian

- 26.150 The Italian Tradition in Literature
- 26.160 Introduction to Italian Culture
- 26.262 The Italian Heritage in North America

Russian

- 36.260 Russian Literature in English Translation—Nineteenth and Twentieth Centuries
- 36.291 ★ Twentieth-Century East-European Literature in English Translation

b) "Literature in original language" courses (in addition to English Literature courses listed above)

Classics

- Greek*
- 15.301 ★ The Tragedians I
- 15.302 ★ The Orators I

- 15.303★ Comedy I
- 15.304★ Lyric and Elegy I
- 15.305★ Epic I
- 15.401★ The Tragedians II
- 15.402★ The Orators II
- 15.403★ Comedy II
- 15.404★ Lyric and Elegy II
- 15.405★ Epic II

Latin

- 16.301★ Lyric and Elegy I
- 16.302★ Drama I
- 16.304★ The Orators I
- 16.306★ Satire I
- 16.307★ Letters I
- 16.308★ Virgil and Epic I
- 16.401★ Lyric and Elegy II
- 16.402★ Drama II
- 16.404★ The Orators II
- 16.406★ Satire II
- 16.407★ Letters II
- 16.408★ Virgil and Epic II

French

- 20.161 Introduction to Literature: French Texts from the Seventeenth to the Nineteenth Century
- 20.162 Introduction to Literature: French Texts from the End of the Nineteenth Century to the Present
- 20.163 Introduction to Literature: French-Canadian Texts from the End of the Nineteenth Century to the Present
- 20.267★ La littérature de XIXe siècle au Canada français
- 20.268★ La littérature du XXe siècle au Canada français
- 20.366 Littérature et sciences humaines I
- 20.381★ Aspects de la littérature canadienne-française
- 20.463★ Aspects de la littérature française (I)
- 20.466★ Littérature et sciences humaines (II)
- 20.468★ Aspects de la littérature canadienne-française I
- 20.470★ Littératures et cultures de la francophonie I

German

- 22.350 German Literature of the Eighteenth Century
- 22.352★ Seminar on a Nineteenth Century Topic
- 22.380 German Literature in the Twentieth Century
- 22.441★ German Literature of the Sixteenth Century
- 22.442★ German Literature of the Seventeenth Century
- 22.469★ Selected Authors of the Nineteenth Century
- 22.483★ Language and Society in Twentieth-Century Germany

Italian

- 26.250 Introduction to the Study of Italian Literature
- 26.350 Italian Literature: Periods, Movements and Genres (1250-1650)
- 26.352 Italian Literature: Periods, Movements and Genres (1650-1990)
- 26.354 Themes in Italian Literature
- 26.360 Themes and Issues in Italian Culture
- 26.450 Italian Literature: Special Topics
- 26.460 Italian Culture: Interdisciplinary Perspectives

Russian

- 36.407 Major Authors: Pushkin to Chekhov
- 36.409 Major Authors: Gorky to Solzhenitsyn

Spanish

- 38.210★ Spanish Civilization
- 38.211★ Spanish-American Civilization
- 38.351★ Spanish-American Literature from Modernism to the Present
- 38.416★ Medieval Spanish Literature, 1300-1500
- 38.431★ Contemporary Spanish Novel
- 38.461 Twentieth-Century Spanish-American Novel II.

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A. Nayak
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G. Roth
D.A. Thomas
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General Information

The School of Computer Science offers a variety of programs and courses which together provide a wide spectrum of educational opportunities for students

wishing to specialize in Computer Science. The Honours Bachelor of Computer Science (B.C.S.) program is professionally recognized and accredited by CIPS, the Canadian Information Processing Society. A co-operative education stream is also available within this program allowing students to complement their academic studies with practical experience in the work-place. In addition, the School offers combined Bachelor of Science (B.Sc.) Honours programs with the Department of Mathematics and Statistics and the Department of Physics. The School offers a number of introductory courses that may stand alone in a program of another field of study or be augmented by a selection of other Computer Science courses to form an area of specialization.

Programs offered at the Graduate level include the Ph.D. and Master of Computer Science (M.C.S.) program offered in conjunction with the Ottawa-Carleton Institute for Computer Science, and the more interdisciplinary Master of Information System Science (M.Sc.) program. For details of these programs please refer to the Calendar of Graduate Studies and Research.

The School of Computer Science has a wide variety of computing equipment for student use. There are 15 laboratories: nine primarily for undergraduate courses, one dedicated to graduate students and five that are used solely for research. The School emphasizes the use of microcomputers to allow each student access to a powerful individual workstation, enabling the provision of a wide spectrum of computational equipment from networked microcomputer systems for student use to networked SUN workstations for graduate research. In addition, all students have access to the campus-wide computing facilities, which include Honeywell mainframe computers.

Bachelor of Computer Science (Honours), B.C.S. (Hons.) Program

The B.C.S. program is an Honours degree program in which candidates are required to complete 20.0 credits or equivalent after admission to First year. Students in the co-operative education stream are minimally required to complete an additional four work-term half course credits.

In order to provide the student with a choice of specialization, the program is designed around a core curriculum combined with a choice of five program options. These options are designed to prepare graduates for professional careers in computer-related occupations or for advanced study at the graduate level.

Admission Requirements

First Year

The OSSD or the equivalent, including six OACs, two of which must be a Calculus OAC and an Algebra and Geometry OAC. An overall average of 65 percent or better is required along with an average of 65 percent or better in Calculus and in Algebra and Geometry; or

the successful completion of Qualifying-University year with a minimum GPA of 5.0 or better and including Mathematics 69.007★ and 69.017★ also with a GPA of 5.0. or better

For the Hardware option only, an OAC in Physics (or the equivalent) must be included.

Advanced Standing

Applications for admission beyond First year will be assessed on their individual merits. Advanced standing will be granted only for those subjects assessed as being appropriate for the program and for the option selected.

Mature Applicants

Persons who lack the normal entrance requirements as published in this Calendar may receive consideration for admission under the mature applicant policy. Applicants will normally have been away from full-time studies for a minimum of two years and must be 21 years of age, or over, by December 31 of the year in which they wish to enrol. For full details see p. 36.

Enrolment Limitation

Applicants should note that meeting the admission requirements can only establish eligibility for selection to the School of Computer Science.

Course Requirements

The program for the degree of Bachelor of Computer Science (Honours) consists of a total of 20.0 credits, normally 5.0 taken each year, including at least 7.5 Computer Science credits, 3.0 from Mathematics and Statistics, 2.5 from the Faculties of Arts and Social Sciences, an additional 2.0 from either the Faculty of Science (excluding Mathematics) or the School of Business, and to include at least 2.0 credits chosen from 400-level courses.

Because the study of computer science is necessarily structured, students are required to select a course of study from one of five options in addition to those courses of the core program. The options are:

1. Software
2. Hardware
3. Theory of Computing
4. Scientific Applications
5. Management and Business Systems

Relevant Courses

All courses bearing a 95 prefix carry the designation Computer Science. In addition, the following courses offered by the School of Business and the Faculty of Engineering are relevant to the B.C.S. program, are counted as Computer Science credits and are treated as Computer Science courses in the calculation of GPAs. (See also p. 227.)

Business 42.230★, 42.240★, 42.342★, 42.348★, 42.440★, 42.442★, 42.446★, 42.447★.

Engineering 94.333★, 94.405★, 94.457★.

Core Courses

All students enrolled in the Computer Science degree program are required to complete the following core courses:

First Year

Mathematics 69.107★ and 69.114★;

Computer Science 95.105★, 95.185★, 95.106★ and 95.102★.

Second Year

Mathematics 69.217★;

Computer Science 95.202★, 95.203★ and 95.204★.

Third Year

Mathematics 69.311★;

Computer Science 95.300★, 95.304★, 95.305★, 95.384★ and 95.385★.

Fourth Year

Computer Science 95.495★.

Program Options

Software Option

This option is intended for students whose interests include the design and implementation of large-scale software systems. Examples of such systems are language processors, operating systems and data management systems. Program requirements for the Software option are:

First Year

1.0 credit in an experimental science.

Second Year

Mathematics 69.207★ and 69.265★;

Computer Science 95.207★.

Third and Fourth Years

Computer Science 95.302★, 95.401★, 95.484★;

1.0 additional Computer credit at the 300-level or above;

and

1.0 additional Computer Science credit at the 400-level.

Hardware Option

This option is intended for students seeking to combine an interest in computing with an interest in electronics. It prepares students for careers in the design and construction of both large- and small-scale computer systems. Program requirements for the Hardware option are:

First Year

Physics 75.101★ and 75.102★.

Second Year

Mathematics 69.207★, 69.208★, 69.265★;

Computer Science 95.206★;

Engineering 91.251★.

Third Year

Computer Science 95.306★;
Engineering 97.257★.

Fourth Year

0.5 Engineering or Computer Science credit at the 300-level or above.

1.5 Engineering or Computer Science credits at the 400-level or above.

Theory of Computing Option

This option is intended for students with an interest in the theoretical aspects of computer science. While retaining a good number of practical courses, the option emphasizes the theoretical aspects, thus providing the student with a sound foundation for graduate studies. Program requirements for the Theory of Computing option are:

First Year

1.0 credit in an experimental science.

Second Year

Mathematics 69.207★, 69.265★;
One of Computer Science 95.206★ or 95.207★.

Third and Fourth Years

One of Mathematics 70.482★, Computer Science 95.483★, or 95.486★;

Two of Computer Science 95.302★, 95.386★, or 95.401★.

Computer Science 95.484★ and 95.485★;

0.5 Computer Science credit at the 200-level or above.

1.0 Computer Science credit at the 300-level or above.

Scientific Applications Option

This option is intended for students whose interest in computers centres around the applications of computers to science. It provides a strong framework of Computer Science courses to which additional Science courses may be added. Program requirements for the Scientific Applications option are:

First Year

1.0 credit in an experimental science.

Second Year

Mathematics 69.207★;

Computer Science 95.206★.

1.0 experimental Science credit.

Third Year

Mathematics 69.265★;

Computer Science 95.386★;

1.0 experimental Science credit at the 200-level or above.

Fourth Year

Computer Science 95.306★;

Two of Engineering 94.405★, Computer Science 95.484★, or 95.486★;

0.5 Computer Science credit at the 400-level or above.

Management and Business Systems Option

This option is intended for students whose interests include the application of computers to business. It is

designed to prepare students for the careers in this field, with a combination of Computer Science courses and a strong component of courses selected from those offered by the School of Business. Program requirements for the Management and Business Systems option are:

First Year

Business 42.101★ and 42.102★;

Economics 43.100.

Second Year

Business 42.210★, 42.230★, 42.250★;

Mathematics 69.257★.

Third Year

Business 42.343★;

One of Business 42.348★ or Computer Science 95.207★.

Fourth Year

1.0 credits in Business at the 300-level or above;

0.5 credit in Business at the 400-level;

One of Mathematics 69.259★ or 0.5 credit in Mathematics at the 200-level or above;

Computer Science 95.403★;

0.5 Computer Science credit at the 400-level.

Counselling

Every student in the Bachelor of Computer Science degree program is encouraged to contact the School of Computer Science Undergraduate Adviser with any question related to the program. In particular, students are expected to seek counsel in such matters as selecting options and choosing elective courses.

Experimental Science Credits

The following courses are acceptable as Science courses for Computer Science students but not as experimental science courses: Biology 61.190, 61.192★, 61.216★, 61.262★, 61.393★, Chemistry 65.103★, 65.107, Geology 67.104★, 67.383★, Physics 75.190, 75.195, Science 60.100, 60.200.

The Co-operative Education Stream

Students in the Bachelor of Computer Science program have the opportunity to enrol in a Co-operative education stream. Students admitted to this stream must satisfy the normal requirements for graduation from the B.C.S. program and, in addition, the graduation requirements specific to the Co-operative stream.

Co-operative education is based on the principle that during the undergraduate years an academic program combined with integrated work experience in alternating terms, is relevant to, and desirable for, effective professional preparation. The work terms allow the student to acquire experience in the area of career interest, while the academic terms can more properly be devoted to fundamental and theoretical studies. The practical experience is in no sense a substitute for, but is rather a complement to, the academic studies.

The motivation, responsibility and opportunity for insight gained through co-operative education can be of significant value to the student's future. The co-operative concept enables those with a career orientation to become full-time students of their subject, both during the academic terms and during the related work terms, within a structure of organized purpose and serious study.

Operation of the Co-operative Stream

Necessary arrangements for integrating work terms, securing potential employers, arranging interviews, and generally managing the employment process are the responsibilities of the Co-operative Program Administrator. With the assistance of faculty, the Co-operative Program Administrator counsels students, visits them on the job, assists them to adjust to work situations, and encourages their professional development.

The Work/Study Sequence

Students admitted to the Co-operative stream normally enter the work-place for their first work term on completion of year two in the B.C.S. program. The normal mode of operation requires two eight-month (or double) work terms and one four-month (or single) work term as shown on this page.

Students in the Co-operative stream will require 56 months to complete their program as opposed to 44 months in the regular Honours program. Variations in the work study sequence may be requested due to academic or work situations in upper years. Precise start and finish dates for work terms are established in consultation with Co-operative employers.

Co-operative Stream Admission Requirements and Registration Information

To be eligible for admission to the Co-operative stream within the B.C.S. program, a student must:

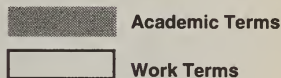
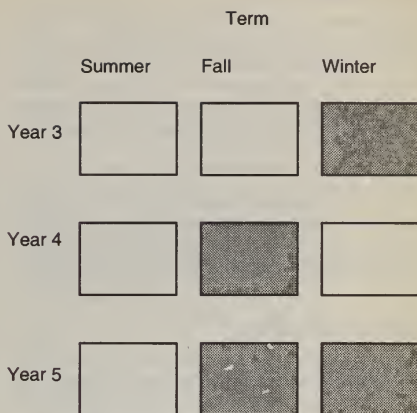
- (a) have a cumulative GPA of 8.0 or better in Computer Science and 6.5 or better overall;
- (b) have successfully completed 3.0 credits in Computer Science at the time of application;
- (c) be registered as a full-time student;
- (d) be eligible to work in Canada.

Note that meeting the above requirements only establishes eligibility for admission to the program. Enrolment in the Co-operative stream is limited; the number of students admitted will generally be dependent on the prevailing job market.

Application forms for admission to the Co-operative stream are available from the School of Computer Science Office. Completed applications should be submitted to the School of Computer Science by January 15, May 15 and September 15 for the respective work terms. Admission decisions are based on GPA achieved by the end of the previous term.

Employment

Although every effort is made to find a sufficient number of work-term positions for all students enrolled in the Co-operative stream, no guarantee of



employment can be made. The employment process is competitive, and academic performance, skills, motivation, maturity, attitude and potential, will determine whether a student is offered a job.

Registration Through Final Term

All work terms must be completed before the end of the final academic term. Co-operative students must be registered as full-time students in the Bachelor of Computer Science program in all academic terms of the Co-operative program from point of entry through to the final academic term. The only exception occurs when a student may have sufficient credits to be able to register as a part-time student in the final term.

During a work term, co-operative students will register in one of five co-operative work term report courses; Computer Science 95.320★, 95.321★, 95.322★, 95.420★, or 95.421★. While on a work term, students are limited to an additional 0.5 credit course, unless they have written support from their employer to take 1.0 credit.

Seeking Employment and Employer Interviews

Seeking Employment

Students are expected to seek employment through the interview process arranged by the Co-operative Program Administrator. Students may not seek employment directly with a Co-operative employer unless specific arrangements are made with the School. Students who wish to arrange their own work term assignment must have the position evaluated by the School before it may be considered for credit. Students intending to find their own jobs may not take part in the normal application and interview process arranged by the School.

Initial Job Application

The maximum number of initial job applications allowed may vary from time to time, depending on the number of job opportunities and the number of students seeking employment. The maximum number will be conveyed to students in the Co-operative stream by the Co-operative Program Administrator.

Re-posting and Late Posting

Students may apply for a specified maximum number of additional interviews with employers who submit their job description late, as well as with employers who receive limited response to their initial advertisement.

Release of Information

A Co-operative Student Record is maintained for each student in the co-operative stream. This record contains information relating to the completion of work terms, assessment of work term reports, Employer Evaluation of Co-operative Student forms, records of Co-ordinator interviews, etc. This confidential file is available for examination upon the student's proof of identification. No information may be removed from the file. By registering in the Co-operative education stream, students agree that academic transcripts and pertinent information from a student's co-operative student record form part of the application package and may be made available to potential employers. Copies of Employers Evaluation of Co-operative Student forms will be released only upon written authorization from the employer, as this form is considered to be an extension of the employer's file.

Missing Interviews

Students are expected to attend all individual interviews granted to them. Students who anticipate missing an interview for just cause should inform the School immediately so that other arrangements can be made.

Ranking Employers

Students rank all employers for whom they are prepared to work and by whom they have been interviewed. Ranking an employer amounts to an agreement to work for that employer if placed there through the placement process. Refusal to accept a job that has been ranked by the student will normally result in the student's being required to withdraw from the Co-operative stream.

Deleting Job Choices

The deletion of a job choice will be considered when the student consults with the Co-operative Program Administrator.

Acceptance of Employment

When students are placed they will normally receive from the employer a letter or a contract notifying them of the placement. Each student is expected to write a letter of acceptance to the employer or to sign the contract with the employer as appropriate.

Inability to Find Suitable Employment

In the case that a student is unable to obtain suitable employment through the normal placement process or has been given permission to seek his/her own job but fails to do so, the student is expected to register as a full-time student in the Bachelor of Computer Science program. The only exception to this rule occurs in the Summer term.

Failure to Report to Employer

Failure to report to an employer without prior approval from the Co-operative Program Administrator will normally result in the student's being required to withdraw from the Co-operative stream.

Leaving Employer Without Prior Approval

Terminating employment without prior approval from the Co-operative Program Administrator will normally result in the student's being required to withdraw from the Co-operative stream.

Strikes

It is each individual student's responsibility to decide whether or not to cross a picket line in the case of a strike. The role of the Co-operative Program Administrator in this situation is to inform the student of the potential results of either decision.

Dismissal With Cause

Dismissal of a student by an employer will be investigated by the Co-operative Program Administrator and will normally result in the student's being required to withdraw from the Co-operative stream.

Commitment

Normally during double work terms the student is expected to work for the same employer. Provision is, however, allowed for such situations as one-term jobs and economic uncertainty.

Change of Work Term — Academic Term Sequence

Upon entry to the Co-operative program, a student is expected to follow the prescribed work term/academic term sequence. However, applications to change the sequence will be considered by the School.

Communication with the School

Each student is expected to maintain communication with the School on all matters pertaining to participation in the Co-operative program. Consultation with the Co-operative Program Administrator is essential where regulations and procedures for the Co-operative stream are an issue. It is the student's responsibility to ensure that his/her student file is current and correct.

Work Term Assessment

Successful completion of a work term is achieved by the submission of a satisfactory work-term report and receipt of a satisfactory evaluation from the employer.

Students are expected to submit a written work-term report at the end of each work term. During a double work term a student is expected to complete a report after four months as well as a final report. Employers may require additional reports from students as part of the job. Normally, for a report to be considered it must have been written during the work term and be related to or evoked by the work-term activity. In addition, Co-operative students will be assessed on their performance in the work-place by their supervisor, the assessment being reported to the School.

An unsatisfactory work term report or a poor assessment in the work-place will not affect the academic progress of a student but may result in a student being required to withdraw from the Co-operative education stream.

Students are normally expected to complete the full complement of five work terms in the prescribed academic term/work term sequence. With prior approval from the Co-operative Program Administrator, however, allowance can be made for personal considerations, educational opportunities, and other extenuating circumstances. For these students, and for students given advanced admission to the Co-operative program, a minimum of four work terms must be successfully completed before graduation.

Work-Term Reports

Work-term reports are graded as Satisfactory or Unsatisfactory. Work-term report grades will be recorded on a student's transcript under the appropriate work-term report course number. Provision is made for students to upgrade Unsatisfactory work reports for re-evaluation by the beginning of the student's next academic term. Students who fail to submit a work report or who fail to upgrade an Unsatisfactory work report will have a work-term failure recorded on their Co-operative Student Record.

The School provides a common set of written guidelines for all work-term reports. Work-term reports are evaluated and graded by a faculty member.

Employer Performance Evaluations

Evaluation grades are recorded on the "Employer Evaluation of Co-operative Student" form. The student should ensure that the employer has sent a completed evaluation to the University. An Unsatisfactory evaluation is investigated by the Co-operative Program Administrator and will normally result in a work-term failure being recorded on the Co-operative Student Record. Employer evaluation grades are not recorded on a student's transcript.

Voluntary Withdrawal from the Co-operative Stream

Students may withdraw from the Co-operative education stream without penalty. Such students are eligible to continue in the regular B.C.S. program

provided they meet the academic standards required for continuation in this program.

Required Withdrawal from the Co-operative Stream

Students may be required to withdraw from the co-operative education stream if they fall into one or more of the following categories:

- failure to meet the academic standards required for continuation in the co-operative education stream (see p. 216);
- failure to submit a work term report;
- submission of an unsatisfactory work term report or receipt of an unsatisfactory employer evaluation;
- dismissal with cause by an employer;
- refusal to accept a position which the student has ranked;
- failure to report to an employer or leaving an employer without prior approval;
- independent search for a work placement by a student who has previously elected to take part in the normal application and interview process arranged by the School;
- missing a pre-arranged interview with an employer.

Standing and Appeals

The Co-operative Program Administrator administers the regulations and procedures applicable to the Co-operative program and will report any instance of a student failing a work term or being required to withdraw from the Co-operative stream for any reason to the School Co-operative Education Committee for a final decision. The student is notified by letter of the final decision made by the Committee. The decision may be appealed through the normal appeal channels within the University.

Combined Honours B.Sc. Programs

A Combined Honours program must include a minimum of 6.0 credits in Computer Science. These requirements can be satisfied as follows:

Computer Science and Mathematics

Students in this program follow the prescribed Combined Honours B.Sc. program outlined on p. 389. The program features equal emphasis on Mathematics and Computer Science.

Computer Science and Physics

Students in this program follow the prescribed Combined Honours B.Sc. program outlined on p. 429. The program features equal emphasis on Physics and Computer Science.

Introductory Courses

Of the 10.0 100-level courses offered in Computer Science, 6.0 are entry-level courses, viz., Computer Science 95.100*, 95.101*, 95.103*, 95.104*, 95.105*, and 95.107*. Computer Science 95.102*, 95.106* and 95.108* are second-level

Legends:

X - required course

0 - specified optional course

★ - unspecified course of particular interest

Notes:

1. This chart does not show 100-level courses.
See section entitled *Introductory Courses*, p. 219.

2. This chart does not include relevant courses offered by the School of Business or the Faculty of Engineering. A list of these courses can be found in the section entitled *Other Relevant Courses*, p. 227.

Course	Software	Hardware	Theory of Computing	Scientific Applications	Management and Business Systems
95.202★ Data Structures and Data Types	X	X	X	X	X
95.203★ Computer Organization	X	X	X	X	X
95.204★ Programming in the Large	X	X	X	X	X
95.206★ Digital Logic	★	X	0	X	0
95.207★ Programming Language Concepts	X	★	0	★	0
95.300★ Operating Systems	X	X	X	X	X
95.302★ Compiler Construction	X	★	0	★	
95.304★ Software Systems Design	X	X	X	X	X
95.305★ Database Management Systems	X	X	X	X	X
95.306★ Microprocessor Interfacing	★	X		X	
95.384★ Data Structures and Algorithm Analysis	X	X	X	X	X
95.385★ Discrete Structures and Applications	X	X	X	X	X
95.386★ Numerical Analysis	0	0	0	X	0
95.387★ Mathematical Software	★		★	0	
95.400★ Advanced Operating Systems	★	★		★	★
95.401★ Concurrent Programming	X	★	0	★	★
95.402★ Computer Graphics	★	★		★	★
95.403★ Transaction Processing Systems	★	★			X
95.405★ A First Course in Robotics and Computer Vision	★	★	★	★	
95.407★ Applied Artificial Intelligence	★		★		
95.408★ Performance Modelling	★	★	★	★	★
95.409★ Introduction to Parallel and Systolic Computing	★	★	★	★	
95.483★ Computable Functions			0		
95.484★ Design and Analysis of Algorithms	X	★	X	0	★
95.485★ Theory of Automata	★		X		
95.486★ Numerical Linear Algebra			0	0	
95.490★ Advanced Topics in Computer Science	★	★	★	★	★
95.491★ Directed Studies	★	★	★	★	★
95.495★ Honours Project	X	X	X	X	X

courses and should not be attempted unless one of the entry-level courses has been successfully completed. Computer Science 95.185★ requires concurrent registration with one of the entry-level Computer Science courses.

With respect to the entry-level courses, students are expected to take only one. Specifically, students in the B.C.S. program or in a combined Computer Science program should note that credit will not be given for any of Computer Science 95.100★, 95.101★, or 95.104★ nor can credit be given for more than one of Computer Science 95.103★, 95.105★, or 95.107★. In selecting an entry-level course, students should take into account the following:

1. Computer Science 95.100★ is designed specifically for Arts students and may not be taken for credit by students in Computer Science, Science or Engineering.
2. Computer Science 95.101★ is designed specifically for Social Science students and may not be taken for credit by students in Computer Science, Science or Engineering
3. Computer Science 95.103★ is designed specifically for Science students and requires a sound preparation in mathematics.
4. Computer Science 95.104★ is designed specifically for Science and Industrial Design students and may not be taken for credit by students in Computer Science.
5. Computer Science 95.105★, and 95.107★ are special entry-level courses designed specifically for students in (1) Computer Science and (2) Business or Science respectively. These are not stand-alone courses and should, therefore, not be chosen by students who are not committed to further studies in these disciplines.

Note:

Social Sciences 03.300★ may not be taken for credit by students in Computer Science.

Computer Science Course Selection

The table on p. 220 is designed primarily for B.C.S. students, to assist in both option and course selection. Since it is organized by specialization option, the table will also be useful to students in Combined Honours programs as well as to students seeking a concentration in Computer Science within some other degree program. The table contains only Computer Science courses beyond the 100-level.

Academic Standing

Grading System

Standing in courses will be shown by alphabetical grades. (See p. 50).

Standings to represent special circumstances are as follows:

Aeg

Pass standing granted although absent from final examinations. Aegrotat standing is granted only by the School of Computer Science Committee on Admission and Studies in response to a student's written request. It will be granted only in exceptional circumstances and if the term work has been of high quality.

Ch

Credit granted under the Challenge for Credit policy.

F

Failure. No academic credit.

FNS

Failure, but with supplemental privileges withdrawn because of unsatisfactory term work or an unacceptably low mark in the examination. No academic credit.

Wdn

Withdrawn in good standing. No academic credit.

Abs

Failure due to absence from the final examination where the necessary term work has been completed. No supplemental privileges. No academic credit.

Def

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the School of Computer Science Committee on Admission and Studies for deferred examination privileges.

IP

In progress.

Sat

Satisfactory

Uns

Unsatisfactory

Computation of Averages

Using the 12-point system, the grade points earned in any specific course are determined by multiplying the grade points corresponding to a grade by the credit value of the course. GPAs are calculated by dividing the total accumulated grade points by the total credits. Overall averages are calculated on the grades earned in all courses applicable to the degree. Computer Science GPAs involve only those courses listed or cross-listed as Computer Science and those courses offered by the School of Business and the Faculty of Engineering that are counted as Computer Science credits. A list of these courses can be found in the section entitled *Other Relevant Courses*, p. 227. Work Term Report Courses are not included in the computation of averages.

Unless otherwise indicated, courses are one full credit, indicated 1.0 on all record documents. Courses marked ★ are half-credits, indicated 0.5 on documents.

Course Load

The normal course load for a full-time student in the School of Computer Science, during the Fall/Winter session, is the equivalent of 5.0 credits. The normal maximum course load for a part-time student, in the Fall/Winter session, is the equivalent of 2.0 credits.

Students may register for a maximum of 2.0 credits in the Summer session.

A student in good standing may exceed the normal course load only with the recommendation of the Director of the School of Computer Science.

Promotion from First Year

Full-time students in First year, in order not to fail their year in May, must, by then, have passed at least 3.0 credits or equivalent. To be promoted to the course-credit system, a full-time student must pass, by the end of August, at least 4.0 credits from the First year of his or her chosen option, including at least one credit in Computer Science, with a GPA of 6.5 or better in Computer Science courses and at 5.0 or better overall. (GPAs are to include any failing grades.) Part-time students must meet the same grade-point standards and pass at least 4.0 of the first 6.0 approved credits attempted.

For all students, promotion to the course-credit system must be accomplished in not more than three calendar years from the date of first registration in the B.C.S. program.

A student who fails to meet these promotion requirements is deemed to have failed First year and must forfeit credit for courses with grades of less than C- and is required to withdraw from the B.C.S. program. Such students are eligible to re-apply for admission and, if admitted, will repeat First year without encumbrances, retaining credit towards their degree (but not towards completion of First year) for all courses graded C- or better. A student who fails First year a second time forfeits his or her undergraduate status in the B.C.S. program and is ineligible for any further registration in the B.C.S. program.

Course Credit System

Students meeting promotion requirements at the end of First year will proceed on the course-credit system. Under this system there is no promotion from one year to the next.

After promotion to the course-credit system, a student may accumulate a maximum of 3.0 credits in supplemental examinations, grade-raising examinations, repeated courses, course replacements.

To continue in the B.C.S. program, a student must, by the end of August each year, have gained credit in the past 12 months towards the B.C.S. degree and have a cumulative GPA of 6.5 or better in Computer Science courses and 5.0 or better overall. (GPAs are to include any failing grades.) Failure to comply with these standards requires withdrawal from the program. Such students may, however, be eligible to transfer into another degree program. Guidance of the Registrar of the School of Computer Science should be sought in such cases.

To continue in the Co-operative stream of the Bachelor of Computer Science program, a student must, by

the end of August each year, have gained at least 2.0 academic credits (other than work term report credits) during the past 12 months towards the B.C.S. degree and have a cumulative GPA of 8.0 or better in Computer Science and 6.5 or better overall; (GPAs are to include any failing grades). Failure to meet these standards requires withdrawal from the Co-operative stream. Students required to withdraw from the Co-operative stream are eligible to continue in the regular Bachelor of Computer Science program provided they meet the academic standards required for continuation in this program.

Examinations

General regulations on examinations are on p. 50. In addition, the following regulations apply to students in the B.C.S. program.

Supplemental Examinations

Students may request a supplemental examination in a course graded F. Application to write supplemental examinations must be made at the School of Computer Science Registrar's office by the designated date.

Deferred Examinations

Students unable to write a final examination because of illness or for compassionate reasons may apply within one week after the final examination to the School of Computer Science Registrar's office for permission to write a deferred examination. Permission can be granted only if the absence is fully and specifically supported by a medical certificate or other documents.

Grade-Raising Examinations

A student may apply to the School Registrar's office to write a grade-raising examination in a course already passed. The grade received on this examination will supersede the previous grade whether it is higher or lower.

Graduation**University Graduation Requirements**

See p. 52.

Application to Graduate

Students expecting to graduate in the Spring must make application on the form available in the School Registrar's office by February 1; those expecting to graduate in the Fall, by September 1; and those expecting to graduate in February, by December 1.

Graduation Requirements

To qualify for graduation with a Bachelor of Computer Science degree with Honours a student must:

1. present at least 20.0 approved credits beyond Qualifying-University year, including at least 13.0 credits at the 200-level or higher;

2. meet the program requirements of the School of Computer Science for at least one of the B.C.S. program options;
3. meet the minimum grade-point standards for Honours as stated below;
4. complete the program within seven calendar years of the entry to the course credit system;
5. be recommended by the School Council and the Faculty Board of the School of Computer Science.

To qualify for graduation with a Bachelor of Computer Science degree with Honours and Co-operative degree designations a student must:

1. present at least 22.0 approved credits beyond Qualifying-University year, including at least 15.0 credits at the 200-level or higher;
2. meet the program requirements of the School of Computer Science for at least one of the B.C.S. program options;
3. meet the minimum grade-point standards for Honours as stated below;
4. complete the program within seven calendar years of the entry to the course credit system;
5. successfully complete a minimum of four work terms;
6. be recommended by the School Council and the Faculty Board of the School of Computer Science.

Designations of Honours Degrees

Three designations of Honours are awarded, determined on the basis of the GPA as follows:

Highest Honours

10.0 - 12.0 in Computer Science courses, and 8.0 or better overall

High Honours

9.0 or better in Computer Science courses, and 7.0 or better overall

Honours

6.5 or better in Computer Science courses, and 5.0 or better overall

Co-operative Degree Designation

Graduates successfully completing the requirements for graduation from the Co-operative Education Stream will receive a *Co-operative* degree designation in addition to the Honours designation.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Some of the following Computer Science courses are cross-listed from other parts of the Calendar. In every such case, only one course is actually offered and the two numbers are alternate identifiers for this single course. Students in the B.C.S. program should reg-

ister in such a course under the Computer Science (95) number.

Note:

In all courses with programming assignments, students usually find it necessary to be on campus at other than the scheduled lecture periods to make use of computing facilities.

Computer Science 95.100★

Introduction to Computers for the Humanities

This course is intended to give students in the humanities a working knowledge of computers and their applications; computer fundamentals; use of computing facilities; introduction to graphical user interfaces; a sampling of software packages applied to problems in the humanities.

Precludes additional credit for Computer Science 95.101★ and 95.104★.

This course cannot be taken for credit by students in Business, Engineering, Science, or Computer Science.

Lectures three hours a week.

Computer Science 95.101★

Introduction to Computers for the Social Sciences

This course is intended to give students in the social sciences a working knowledge of computers and their applications; computer fundamentals; use of computing facilities; introduction to graphical user interfaces; a sampling of software packages applied to problems in the social sciences.

Precludes additional credit for Computer Science 95.100★ and 95.104★. This course cannot be taken for credit by students in Business, Engineering, Computer Science or Science.

Lectures three hours a week.

Computer Science 95.102★

Introduction to Systems Programming

A second course in programming designed to introduce the student to procedural and functional abstractions, pointer manipulations, and problem solving in the context of systems programming.

Precludes additional credit for Engineering 91.167★. Prerequisite: One of Computer Science 95.103★, 95.105★, or 95.107★.

Lectures three hours a week.

Computer Science 95.103★

Introduction to Scientific Computing

A first course in computer programming primarily for students in the Faculty of Science. Introduction to computers and algorithms. Use of the Carleton time-sharing system. Introduction to FORTRAN programming through examples taken from mathematics and science. Basic procedures: summing, sorting, looping. Iterative solutions to problems. Non-numeric programming. Random numbers. Simulation of simple physical systems. The computer system: inside the computer. Use of the batch system. Efficient and structured programming.

Precludes additional credit for Engineering 91.166★. Prerequisite: One of Mathematics 69.107★, 69.117★, 69.127★, 69.102, 69.112, which may be taken concurrently.

Lectures three hours a week.

Computer Science 95.104★

Introduction to Computers for the Sciences

This course is intended to provide students with a working knowledge of computers and their applications. Topics covered include computer fundamentals, basic programming concepts, and the use of application packages in the sciences. Sample applications may include text processing, graphics manipulation, spreadsheets, hypertext systems, visual programming languages, databases, plotting, symbolic mathematics, computer aided design.

Precludes additional credit for 95.100★ and 95.101★. This course cannot be taken for credit by students in the B.C.S. program or combined programs in Computer Science.

Lectures three hours a week.

Computer Science 95.105★

Introduction to Programming

A first course in problem solving and computer programming designed for students who wish to specialize in Computer Science. Topics include: programming style; procedural abstraction; data abstraction; testing; a variety of numeric, non-numeric, and graphical applications.

Precludes additional credit for Engineering 91.166★.

Lectures three hours a week and one hour tutorial.

Computer Science 95.106★

Computer Applications

A continuation of Computer Science 95.105★ designed to give students more experience in numeric and non-numeric programming through case studies. The emphasis is on teaching fundamental computational concepts through design and implementation of application programs covering a range of application areas such as: text processing; symbolic manipulation; file processing; numerical methods.

Prerequisites: Computer Science 95.105★ or (with self-study of the programming language used) 95.108★, and a 100-level course in calculus, which may be taken concurrently.

Lectures three hours a week.

Computer Science 95.107★

Introduction to Structured Programming

A first course in computer programming, primarily for students in Business or Science. Introduces basic sequencing, alteration, and looping control constructs, functional and procedural abstractions, data abstraction, and problem-solving in the context of computer programming.

Precludes additional credit for Engineering 91.166★.

This course cannot be taken for credit by students currently registered in Computer Science programs.

Lectures three hours a week.

Computer Science 95.108★

Structured Programming Applications

A continuation of Computer Science 95.107★, primarily for students in Business or Science. Designed to give students more experience at problem-solving using recursion, linked lists, trees, sorting and searching, and numerical techniques.

This course cannot be taken for credit by students currently registered in Computer Science programs. Prerequisites: Computer Science 95.107★ or (with self-study of the programming language used) one of Computer Science 95.103★ or 95.105★.

Lectures three hours a week.

Computer Science 95.185★

Introduction to Discrete Structures

An introduction to the discrete mathematics and discrete structures of computer science, providing an overview of the major strands in theoretical computer science. The following topics are introduced: propositional and predicate calculus, combinatorial counting and recurrence relations, graphs, and formal language theory, automata theory, computability. (Also listed as Mathematics 69.185★.)

This course is available to Science students only as a free option.

Prerequisites: Two OACs in Mathematics courses; and one of Computer Science 95.103★, 95.105★, or 95.107★ (which may be taken concurrently).

Lectures three hours a week.

Computer Science 95.202★

Data Structures and Data Types

A course designed to provide in-depth experience in the design and construction of computer programs involving data structures. The data structures, including stacks, queues, lists, trees and records are presented from the viewpoint of the data type programming concept.

Precludes additional credit for Engineering 94.202★.

Prerequisite: Computer Science 95.106★.

Lectures three hours a week.

Computer Science 95.203★

Computer Organization

A thorough treatment of computer system organization. Micro, mini and mainframe architectures. Instruction sets and addressing modes. Input/output methods and devices. Micro-coded interpreters. Operating system functions, virtual I/O and memory management techniques.

Precludes additional credit for Engineering 94.303★ for students in the Computer Science program and in combined programs with Mathematics or Physics.

Prerequisite: Computer Science 95.102★ or Engineering 94.165.

Lectures three hours a week.

Computer Science 95.204★

Programming in the Large

Introduction to the problems of developing complex software systems: software life cycle; structured design and programming; functional decomposition; table-driven programming; object-oriented programming; language support for modular programming, testing, and debugging. Assignments stress both design and implementation issues and make use of a variety of high-level programming languages and tools.

Prerequisite: Computer Science 95.106★ or 95.108★.

Computer Science 95.206★

Digital Logic

Fundamental concepts in digital logic; Boolean algebra, gates, flip-flops, combinatorial networks, fundamentals of minimization, sequential finite state machines, counters, and registers.

Precludes additional credit for Engineering 94.367★.

Prerequisite: Computer Science 95.102★.

Lectures three hours a week, laboratory three hours a week.

Computer Science 95.207★**Programming Language Concepts**

An introduction to the study of programming languages emphasizing language semantics. Detailed study of the fundamentals of several important programming languages involving procedural, functional, logic, and object-oriented programming paradigms.

Prerequisite: Computer Science 95.202★ or Engineering 94.202★.

Lectures three hours a week.

Computer Science 95.300★**Operating Systems**

A first course in operating systems stressing fundamental issues in design: process management; memory management; process co-ordination and synchronization; interprocess communication; real-time clock management; i/o device drivers; file systems; frame-level network communication. Assignments involve the use, modification, and extension of a multitasking operating system.

Precludes additional credit for Engineering 94.301★.

Prerequisites: One of Computer Science 95.202★ or Engineering 94.202★, and one of Computer Science 95.203★ or Engineering 94.303★.

Lectures three hours a week.

Computer Science 95.302★**Compiler Construction**

The structure, organization and design of the phases of a compiler are considered: lexical translators, syntactical translators, scope handlers, type checkers, code generators and optimizers. Components of a compiler will be implemented.

Prerequisite: Computer Science 95.202★ or permission of the School.

Lectures three hours a week.

Computer Science 95.304★**Software Systems Design**

This course is primarily concerned with the non-programming aspects of the construction of large software systems: requirements specification; software design methodologies; hardware/software selection; high-level development tools; documentation (functional specification, user manuals, on-line manuals); configuration management (test plans, programming standards, release control); project management (project plans and schedules, programming teams, structured walkthroughs, estimating time and costs). Precludes additional credit for Engineering 94.310★ and 94.480★.

Prerequisite: Computer Science 95.204★.

Lectures three hours a week.

Computer Science 95.305★**Database Management Systems**

Introduction to database concepts. Data models: entity-relationship, relational, network and object oriented. The relational data model: data definition, relational algebra and calculus. Data description and data manipulation languages: SQL, Embedded SQL/C, other query facilities. Relational database design: normal forms and normalization theory. Physical database organization: ISAM, B-trees, Tries, dynamic hashing and multiple attribute storage schemes. Network models and object oriented database systems. Use will be made of available Data-

base Management Systems.

Precludes additional credit for Engineering 94.304★ and Business 42.340★.

Prerequisite: One of Computer Science 95.202★, 95.204★, or Engineering 94.303★

Lectures three hours a week.

Computer Science 95.306★**Microprocessor Interfacing**

A laboratory-oriented course to acquaint students with the design and construction of small-scale microprocessor-based systems. Topics to be covered include: microcomputer structures, microprocessor selection, memory designs and interfaces, I/O devices and interfaces, microprocessor bus standards, serial standards, integration of hardware and firmware, microcontrollers and A/D conversion. Lectures are augmented by laboratory periods providing practical, hands-on experience in microprocessor interfacing.

Precludes additional credit for Engineering 94.361★.

Prerequisites: Computer Science 95.203★ and 95.206★ or equivalent.

Lectures three hours a week, laboratory three hours a week.

Computer Science 95.320★**Co-operative Work Term Report 1**

Prerequisites: Registration in the Co-operative Education Stream of the Bachelor of Computer Science program and permission of the School.

Computer Science 95.321★**Co-operative Work Term Report 2**

Prerequisites: Registration in the Co-operative Education Stream of the Bachelor of Computer Science program and permission of the School.

Computer Science 95.322★**Co-operative Work Term Report 3**

Prerequisites: Registration in the Co-operative Education Stream of the Bachelor of Computer Science program and permission of the School.

Computer Science 95.384★**Data Structures and Algorithm Analysis**

Review of basic data structures such as stacks, queues and lists. Algorithms for their implementation. Representation of arrays, sets and relations. Trees and graphs -representation and applications. Basic techniques of design and analysis of efficient algorithms for sorting and searching. Hashing, dynamic storage allocation, garbage collection. (Also listed as Mathematics 69.384★.)

Prerequisites: A 200-level Mathematics course and Computer Science 95.202★.

Lectures three hours a week.

Computer Science 95.385★**Discrete Structures and Applications**

Enumeration: elementary methods, inclusion and exclusion, recurrence relations, generating functions and applications. Graph theory and algorithms: connectivity, planarity, Hamilton and Euler paths. Error-correcting codes. (Also listed as Mathematics 70.385★.)

Prerequisite: One of Mathematics 69.218★ or 69.311★, 70.210.

Lectures three hours a week and one hour tutorial.

Computer Science 95.386★

Numerical Analysis

Elementary discussion of error, polynomial interpolation, quadrature, linear systems of equations and matrix inversion, non-linear equations, difference equations and ordinary differential equations. (Also listed as Mathematics 69.386★.)

Prerequisites: (i) Mathematics 69.102 or 69.207★ (or 69.201 or 69.202); and (ii) Mathematics 69.112 or 69.217★; and (iii) a working knowledge of one of: Fortran, Pascal, or C.

Lectures three hours a week and one hour tutorial.

Computer Science 95.387★

Mathematical Software

Incorporation of basic numerical methods into efficient, reliable software. The course includes examination of existing software systems, e.g. linear systems, non-linear systems, optimization, or differential equations. (Also listed as Mathematics 69.387★.)

Prerequisite: Computer Science 95.386★.

Computer Science 95.400★

Advanced Operating Systems

An advanced course emphasizing the principles of distributed operating systems including networking protocols, distributed file systems, remote IPC mechanisms, graphical user interfaces, load balancing, and process migration. Case studies include current "standards" as well as novel systems under development such as: Mach (OSF), Amoeba, Plan 9, Windows/NT, TCP/IP, NFS, Andrew, and X11/Motif. This is a "hands on" course with a significant laboratory component allowing students freedom to explore topics in depth.

Prerequisite: Computer Science 95.300★.

Lectures three hours a week.

Computer Science 95.401★

Concurrent Programming

Sequential processing, coroutines and backtracking are introduced as special cases of concurrent processing. The more general concept is then investigated. Topics include the process concept, low-level and high-level process synchronization primitives, Petri nets, message passing, data-driven versus control-driven program execution. Emphasis is placed on applications in such areas as the parallel evaluation of expressions, real-time transaction systems, fault-tolerant computing and operating systems.

Prerequisite: Computer Science 95.300★.

Lectures three hours a week.

Computer Science 95.402★

Computer Graphics

This course is designed to give students an introduction to the basic principles and techniques of computer graphics: Overview of graphics hardware, techniques for defining images; point, vector and raster approaches. Image transformations; scaling, translation, rotations, clipping, windowing. Graphics software and data structures. Input devices and techniques for interactive graphics. Raster graphic systems. An introduction to three-dimensional graphics; transformations, perspective, hidden line removal. Applications of computer graphics.

Prerequisite: Computer Science 95.202★ or permission of the School.

Lectures three hours a week.

Computer Science 95.403★

Transaction Processing Systems

The course investigates the design and implementation of on-line database intensive transaction processing systems. The functional components of a transaction processing system are examined, tracing the transaction flow from clients' input to server responses. The architecture of client/server computing is studied and case studies of current systems are used to illustrate design alternatives and implementation techniques. Topics covered in the course include: X-Windows GUI and GUI-builders, client/server application development, TP monitors, their operating system and application programming interface. Other topics include recovery, concurrency, security and performance modeling.

Prerequisites: Two of Computer Science 95.204★, 95.305★, Engineering 94.304★.

Lectures three hours a week.

Computer Science 95.405★

A First Course in Robotics and Computer Vision

An introductory course in robotics and computer vision emphasizing fundamental concepts: comparative study of robot programming languages; Find Space problem; Find Path problem; boundary tracking; depth finding; edge detecting.

Prerequisites: Computer Science 95.202★, Mathematics 69.208★ and either Physics 75.105 or both 75.101★ and 75.102★.

Lectures three hours a week.

Computer Science 95.407★

Applied Artificial Intelligence

A course emphasizing artificial intelligence techniques and programming. The course investigates selected topics via prototypes that illustrate the basic notions. Sample topics include: pattern matching and query systems; mobile robots and navigation; connectionist systems and learning; constraint systems; rule-based systems; natural language processing; speech acts; planning systems.

Prerequisite: Computer Science 95.207★.

Lectures three hours a week.

Computer Science 95.408★

Performance Modelling

Fundamentals of performance modelling including both analytical and simulation models emphasizing computer systems and subsystems; performance measures; review of probability theory; stochastic processes; simulation programming - generation of pseudo random variates, event management, data collection and analysis; Markov models; Petri net models; queueing theory; and queueing networks.

Prerequisites: Mathematics 69.257★ or 69.265★ and Computer Science 95.300★.

Lectures three hours a week.

Computer Science 95.409★

Introduction to Parallel and Systolic Computing

This course introduces students to algorithms, architectures, and languages for parallel computing. Topics include: models of computation, parallel programming languages, performance measures for parallel algorithms, shared memory parallel ma-

chines, VLSI design methodologies, processor arrays, hypercube multiprocessors, parallel algebraic operations, parallel data structures and parallel searching, parallel geometric processing.

Prerequisite: Computer Science 95.384★.

Lectures three hours a week.

Computer Science 95.420★

Co-operative Work Term Report 4

Prerequisites: Registration in the Co-operative Education Stream of the Bachelor of Computer Science program and permission of the School.

Computer Science 95.421★

Co-operative Work Term Report 5

Prerequisites: Registration in the Co-operative Education Stream of the Bachelor of Computer Science program and permission of the School.

Computer Science 95.483★

Computable Functions

Recursive functions and computability, algorithms, Church's thesis, Turing machines, computational logic, NP-completeness. (Also listed as Mathematics 70.483★ no longer offered.)

Precludes additional credit for Mathematics 70.484.

Prerequisite: Mathematics 70.210 or Computer Science 95.385★ or permission of the School.

Computer Science 95.484★

Design and Analysis of Algorithms

Design techniques: divide-and-conquer, backtracking, dynamic programming, search methods. Algorithms for graph problems, optimization problems, algebraic problems. Lower bounds and the P-NP question. Also offered at the graduate level, with additional or different requirements, as 95.573★, for which additional credit is precluded.

Precludes additional credit for Mathematics 70.484★ (no longer offered).

Prerequisite: Computer Science 95.384★ or permission of the School.

Lectures three hours a week.

Computer Science 95.485★

Theory of Automata

Finite automata and regular expressions, properties of regular sets, context-free grammars, pushdown automata, deterministic context-free languages. Turing machines, the Chomsky hierarchy. Undecidability, intractable problems. (Also listed as Mathematics 70.485★.)

Precludes additional credit for Mathematics 70.565★.

Prerequisite: Computer Science 95.385★ or Mathematics 70.310 or permission of the School.

Lectures three hours a week.

Computer Science 95.486★

Numerical Linear Algebra

Study of matrix inversion techniques; techniques of finding eigenvalues and eigenvectors, solution of systems of linear equations; direct and indirect methods, their comparison and error analysis; applications in optimization and other areas. (Also listed as Mathematics 70.486★.)

Prerequisites: Mathematics 69.112 or 69.217★; and Mathematics 70.200 or 69.309★, or permission of the

School.

Lectures three hours a week.

Computer Science 95.490★

Advanced Topics in Computer Science

Selected topics in Computer Science offered by members of the School of Computer Science.

Prerequisite: Permission of the School.

Lectures three hours a week.

Computer Science 95.491★

Directed Studies

A course of independent study under the supervision of a member of the School of Computer Science, open only to students in the B.C.S. program. Students are required to obtain their supervisor's written approval prior to registration and are limited to two such courses in their programs.

Prerequisite: Permission of the School of Computer Science.

Computer Science 95.495★

Honours Project

As part of the Fourth-year program, each B.C.S. student is required to select and complete a major project in computer science. Students are required to submit written project proposals to the Honours Project Co-ordinator for approval normally during the term preceding the term of registration. Consult the Honours Project Co-ordinator for details.

Prerequisite: Registration in either the Bachelor of Computer Science program or one of the Combined Honours programs involving Computer Science and the permission of the School.

Other Relevant Courses Offered

The following courses are not offered by the School of Computer Science but are relevant to the study of computer science. They may be taken for credit as computer science courses in the B.C.S. program and the combined programs with Computer Science. For full descriptions of these courses please refer to the Calendar entries of the School of Business and the Department of Systems and Computer Engineering.

• Courses Offered by the School of Business

Business 42.230★

Introduction to Management Science

Business 42.240★

Business Information Systems

Business 42.343★

Information Systems Analysis

Business 42.344★

Information Systems Design

Business 42.440★

Management of Information Systems

Business 42.442★

Information Systems Analysis and Design Practicum

Computer Science 228

Business 42.446★

Decision Support Systems

Business 42.447★

Technology Project Management

- **Courses Offered by the Faculty of Engineering**

Engineering 94.333★

Real Time Concurrent Systems

Engineering 94.405★

Discrete Simulation and its Applications

Engineering 94.457★

Architecture of Computer Systems

(Social Sciences)

Telephone: 520-2588

Fax: 520-4467

Academic Administration

Program Co-ordinator

A. Forth

Placement Supervisor

C. Picard

Adjunct Research Professor

M. Los

General Information

The concentration in Criminology and Criminal Justice provides students with the opportunity for focused study relating to crime and criminal justice. It allows students to take courses in the area while completing a Pass or Honours program in the disciplines of Sociology-Anthropology, Psychology or Law. These courses enable the student to be exposed to the variety of topics and approaches one needs in order to master this broad field. When students choose to concentrate in this area, two sets of courses are required:

1. Concentration Requirements.
2. Disciplinary Requirements.

The first set includes those required courses that deal with Criminology and Criminal Justice. The second set refers to those courses required to complete the particular Pass or Honours program chosen (i.e., Law, Sociology-Anthropology or Psychology, or a Combined Pass or Combined Honours in any two of Sociology-Anthropology, Psychology and Law).

Admission to the Concentration

This is a limited enrolment concentration.

Students are considered for admission to the concentration only as they prepare to enter Third year, i.e., after they have completed at least 8.0 credits. (Students who were admitted to the concentration before 1985-86, and who are eligible to continue, are permitted to complete their program of study.)

Admission will be based on the GPA achieved in *specific* courses. These courses are: Psychology 49.100; Law 51.100; one of Sociology 53.100, Anthropology 54.100 or Sociology-Anthropology 56.100; Law 51.204; and Sociology 53.255★ and 53.271★ (formerly 53.270). The GPA will be based on *as many of these 5.0 credits as have been completed*. In order to be considered for admission, at least 3.0 of the 5.0 credits listed above must have been completed. A floating minimum GPA will be used to determine admission to the concentration. That is, the students with the highest GPA in the

courses referred to above will be admitted to the concentration.

Carleton students applying for the concentration must do so through the Criminology Office *no later than May 1* to be considered for a space in the concentration. Students from other institutions should consult the admissions section of this Calendar for deadlines and procedures.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and the requirements as set out below.

Concentration Requirements

1. Psychology 49.100; Law 51.100 (C- or better); one of Sociology 53.100, Anthropology 54.100, or Sociology-Anthropology 56.100 (C- or better).
2. Sociology 53.255★ (Sociology of Deviance) and 53.271★ (Criminology, formerly 53.270)
3. Law 51.204 (Introduction to Criminal Law in Context)
4. Psychology 49.342★ (Criminal Behaviour)
5. Sociology 53.373★ (Criminal Justice Policy) or 53.388★ (Selected Issues in Criminal Justice)
6. Any two of Sociology 53.386★ (Field Placement), Psychology 49.393★ or 49.394★ (Practicum), Law 51.395★ (Practicum)

Students must maintain an average of C- or better in requirements 2 to 6 listed above, in order to remain in, and graduate with, the concentration in Criminology and Criminal Justice.

1.0 full credit of Field Placement or Practicum.

It should be noted that either Psychology 49.210★ or 49.260★ is a prerequisite for Psychology 49.342★, and that Sociology 53.255★, 53.271★ (formerly 53.270) and Third-year standing are prerequisites for Sociology 53.373★ and 53.388★. The prerequisite for Law 51.204 is Law 51.100 with the grade of C- or better. The prerequisite for 53.255★ and 53.271★ is one of Sociology 53.100, Anthropology 54.100, or Sociology-Anthropology 56.100 with a grade of C- or better.

Disciplinary Requirements

Pass Degree

In addition to the concentration requirements, students must also complete compulsory disciplinary requirements. These are found on the chart that follows.

Students in the Criminology and Criminal Justice concentration must select a program from one of the six combinations given:

1. Major in Law
2. Major in Sociology-Anthropology
3. Major in Psychology
4. Combined Major in Sociology-Anthropology and Psychology
5. Combined Major in Sociology-Anthropology and Law
6. Combined Major in Psychology and Law

Honours Degree

Students interested in an Honours degree in Law, Sociology or Psychology, or a Combined Honours degree in two of Law, Psychology or Sociology, with the concentration in Criminology and Criminal Justice must:

1. fulfil the disciplinary requirements for the Honours degree;
2. fulfil the concentration requirements in Criminol-

ogy and Criminal Justice; and

3. in fulfilling the disciplinary requirements for the Honours degree, complete an Honours thesis or essay where required pertaining to the legal, psychological or sociological analysis of crime or criminal justice (thesis or essay topic must be approved by the program co-ordinator) or complete one of the following:

(a) 1.0 credit from the following 400-level Law courses: Law 51.432★, 51.435★, 51.436★, 51.437★, 51.438★, or 51.454★ (other 400-level courses may be approved for credit however they must be chosen in consultation with the program co-ordinator); or

(b) Law 51.490. The topic of the directed study will be pertaining to the legal, psychological or sociological aspects of crime or criminal justice. The directed study topic must be approved by the program co-ordinator.

Disciplinary Requirements for Pass Degree

Requirements for a Major in Sociology-Anthropology

1. One chosen from 53.100, 54.100, 56.100 (C- or better);
2. 53.203 or 54.203
3. One of 56.205, 54.310;
4. 1.0 additional credit in Sociology and/or Anthropology above the 200-level (53.373★ or 53.388★, and 53.386★);
5. 2.0 additional credits in Sociology and/or Anthropology beyond the 100-level (53.255★ and 53.271★).

Requirements for a Major in Law

1. Law 51.100 (C- or better);
2. Two of Law 51.203, 51.204 or 51.205 (51.204);
3. At least 3.0 additional Law credits (51.395★).

Requirements for a Major in Psychology

1. Psychology 49.100;
2. Psychology 49.200;
3. 1.0 credit from Psychology 49.220★, 49.250★, and 49.270★; and 1.0 credit from 49.210★, 49.230★, and 49.260★;
4. 2.0 additional credits in Psychology (including 49.342★ and 49.393★ or 49.394★);
5. 1.0 credit from the Faculty of Arts.

Requirements for Combined Major in Sociology-Anthropology/Law Sociology-Anthropology/Psychology and Psychology/Law

Sociology-Anthropology

1. One chosen from 53.100, 54.100, 56.100 (C- or better);
2. One of 53.203, 54.203, or one of 56.205, 54.310;
3. 1.0 additional credit in Sociology and/or Anthropology above the 200-level (53.373★ or 53.388★, and 53.386★);
4. 1.0 further credit in Sociology and/or Anthropology beyond the 100-level (53.255★ and 53.271★).

Psychology

1. Psychology 49.100;
2. Psychology 49.200 or approved alternative;
3. 1.0 credit from Psychology 49.220★, 49.250★, and 49.270★; and 1.0 credit from 49.210★, 49.230★, and 49.260★;
4. 1.0 additional credit in Psychology (49.342★ and 49.393★ or 49.394★);
5. 1.0 credit from the Faculty of Arts.

Law

1. Law 51.100 (C- or better);
2. Two of Law 51.203, 51.204 or 51.205 (51.204);
3. At least 2.0 further Law credits (51.395★).

Note:

Where concentration requirements also fulfil disciplinary requirements, the courses are listed in parentheses.

For further information consult the program co-ordinator and the Honours adviser in the relevant discipline.

Related Options

There are a number of courses relevant to the area of Criminology and Criminal Justice, which students may consider as options. Such courses are:

Sociology 53.256, Police in Society

Psychology 49.343, Addiction

Psychology 49.364, Abnormal Psychology

Field Placement (or Practicum)

Students must complete any two of Sociology 53.386★, Psychology 49.393★ or 49.394★, and Law 51.395★ as part of their concentration requirements. The courses are open only to Third-year students admitted to the concentration.

(Science)

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Academic Administration

Chair

G. Ranalli

Teaching Staff

Professor Emeritus

F.K. North

Professors

K. Bell

R.L. Brown

J.A. Donaldson

G. Ranalli

G.B. Skippen

R.P. Taylor

D.H. Watkinson

Associate Professors

G.M. Atkinson

J. Blenkinsop

S.D. Carr

G.R. Dix

F.A. Michel

R.T. Patterson

C.J. Schröder-Adams

Instructor

I. Munro

Adjunct Research Professors

R.J. Berman, *Geological Survey of Canada*

H.L. Gibson, *Department of Geology, Laurentian University*

S. Hanmer, *Geological Survey of Canada*

M.D. Hannington, *Geological Survey of Canada*

J. Kukalova-Peck, *Department of Earth Sciences, Carleton University*

D.A. Leckie, *Geological Survey of Canada*

R. Parrish, *Geological Survey of Canada*

T. Setterfield, *WMC International Ltd.*

W. Shilts, *Geological Survey of Canada*

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 112), in addition to all departmental regulations and requirements as set out below.

The designation of the Honours degree awarded for students in the Honours Geology program will be determined on the basis of their GPA for the 10.5 required credits of Geology as stated in the program requirements.

The designation of the Honours degree awarded for students in the Combined Honours programs will be determined on the basis of their GPA for all required credits in the two major subjects as stated in the respective program requirements.

Major Program

The B.Sc. program in Geology is of four years duration beyond the OSSD or Qualifying-University year. A total of 20.0 credits is required as follows:

1. The credit requirements of the First year of the general B.Sc. program. (See p. 108.)
2. At least 10.5 credits in Geology, of which Geology 67.100, 67.221★, 67.223★, 67.228★, 67.231★, 67.232★, 67.281★, 67.282★, 67.321★, 67.323★, 67.324★, 67.332★, 67.385★ and 67.386★ are mandatory. (Geology 67.100 may be taken either in Qualifying-University year or First year.)

Students who have taken Geology 67.105 and attained a grade of B- or better may, with permission of the Department, substitute that course for 67.100.

3. At least 6.0 credits in the other sciences above Qualifying-University year level. Among these, Mathematics 69.107★ and 69.117★, Chemistry 65.100, and Biology 61.103★ and 61.104★ or Physics 75.101★ and 75.102★, or 75.105 are mandatory. At least 3.0 First-year Science credits must be passed before registration for Second-year Geology courses will be permitted, except that, if Geology 67.100 has been taken in Qualifying-University year, a Second-year Geology credit may be substituted.

4. 2.0 approved credits in Arts and/or Social Sciences.

5. 1.5 credits chosen from Science, Arts, Social Sciences or Engineering.

A three-year program for students not intending to become professional geologists is also available. Requirements are the same as for the B.Sc. program outlined above except that Geology 67.282★ is not mandatory, no courses above the 300 series are required, and the total credits will number 15.0, including 7.0 Geology credits; at least 5.0 Science credits outside of Geology, which must include Mathematics 69.107★ and 69.117★, Chemistry 65.100 and 1.0 credit from Biology 61.103★ and 61.104★ or Physics 75.101★ and 75.102★, or 75.105; 2.0 Arts or Social Science credits and 1.0 optional credit.

A typical program is as follows:

First Year

Geology 67.100†;

Chemistry 65.100;

Physics 75.101★ and 75.102★, or 75.105 or Biology 61.100;

Mathematics 69.107★, and 69.117★;

1.0 credit (Arts or Social Science).

(†May be replaced by another Science credit if taken in Qualifying-University year.)

Second Year

Geology 67.221★, 67.223★, 67.228★, 67.231★,

67.232★, 67.281★ and 67.282★;
1.0 100- or 200-level Science credit;
0.5 credit (Arts or Social Science).

Third Year

Geology 67.321★, 67.323★, 67.324★, 67.332★,
67.385★ and 67.386★;
1.0 200-level Science credit;
0.5 credit (Arts, Social Science);
0.5 credit (Arts, Social Science, Science or Engineer-
ing).

Fourth Year

3.0 Geology credits at the 400-level;
1.0 200-level Science credit;
1.0 credit (Arts, Social Science, Science or Engineer-
ing).

Notes:

1. A working knowledge of elementary biology is required for Geology 67.231★ and 67.332★. This requirement may be fulfilled by credit for OAC Biology, Biology 61.103★ and 61.104★ or by arrangement with the instructor for extra reading assignments in Geology 67.231★.
2. All Major and Honours students should note that their selection of Science courses, including Mathematics, should be made with the prerequisites for subsequent Geology courses in mind.
3. Many Fourth-year courses are given in alternate years only. Fourth-year courses offered in the Department of Earth Sciences, University of Ottawa, are scheduled to alternate with those given at Carleton University. Some of the following Geology half credits, of which two may be taken for credit at Carleton, will be offered:

Geology

4312 Paleocology
4322 Structure and Tectonics
4332 Permafrost Geomorphology
4341 Physical Hydrology
4342 Groundwater Geochemistry
4352 Quantitative Analysis in Geology I
4353 Quantitative Analysis in Geology II
4362 Advanced Igneous Petrogenesis
4363 Advanced Metamorphic Petrology
4364 Advanced Sedimentology
4371 Advanced Mineral Deposits
4381 Geochemistry

4. Third-year students possessing prerequisites may be admitted to Fourth-year courses with the permission of the Department.
5. Enrolment in 200-level courses may be restricted due to limited physical resources.

Honours Program

Faculty requirements concerning Honours standing must be maintained. (See p. 109.)

Honours in Geology

1. Courses as prescribed for the Major program are required, except that Geology 67.498 (Thesis) is one of the mandatory credits in Geology, and 1.0 credit in

Mathematics beyond First-year level, and/or Computer Science is mandatory in the group of 6.0 credits required in other sciences. The Department recommends that students take Mathematics 69.257★ and Computer Science 95.104★ in order to fulfil this requirement.

2. The departmental language requirement must be met before completion of the Third year by passing a minimum of 0.5 credit (e.g. French 20.106★) in, or demonstrating reading proficiency in, a language other than English, that is acceptable to the Department.

Combined Honours in Biology and Geology

Program advisers are S.B. Peck and C.J. Schröder-Adams.

Students desiring a comprehensive basic training in both biology and geology may apply for admission to a Combined Honours program, on completion of the First year of the Science program. Applicants must be of Honours standing and must have achieved grades of C+ or better in both Biology 61.100 and Geology 67.100.

Course requirements of the Combined Honours program are as follows:

1. Biology 61.103★ and 61.104★, Geology 67.100, Mathematics 69.107★ and 69.117★. One of Chemistry 65.100, Physics 75.101★ and 75.102★, or 75.105. (The omitted subject, i.e. Chemistry or Physics, must have been taken at the OAC level);
2. 10.0 credits in Biology (or Biochemistry) and Geology beyond First-year level, including at least 0.5 credit field course. Not more than 6.0 credits in this group should be taken in one department and not more than 6.0 credits may be 200-level courses;
3. Biology 61.498 or Geology 67.498;
4. 0.5 credit in Statistics and 0.5 credit in Computer Science. (Mathematics 69.257★ and Computer Science 95.104★ are recommended);
5. 3.0 optional credits, at least 2.0 of which must be acceptable credits offered by the Faculties of either Arts or Social Science;
6. 1.0 Science elective credit;
7. A language requirement must be met during the Third year by passing a course in, or demonstrating reading proficiency in, one of French, German, Russian, Spanish, Italian, Latin, Greek or any language acceptable to the committee and in which suitable arrangements can be made for the examination.

Combined Honours in Chemistry and Geology

Program advisers are R.A. Shigeishi and G.B. Skippen.

A grade of C+ or better in both Chemistry 65.100 and Geology 67.100 and overall Honours standing are required for admittance to the program. Program requirements are as follows:

1. Chemistry 65.100, 65.210, 65.230, 65.353★, 65.354★ and 1.0 Chemistry credit at the 400-level;
2. Geology 67.100, 67.221★, 67.223★, 67.228★, 67.281★, 67.323★, 67.324★ and 1.0 Geology credit at the 400-level;

3. Chemistry 65.498 or Geology 67.498;
4. 1.0 Chemistry or Geology credit;
5. Mathematics 69.107★, 69.117★ and 69.202;
6. Physics 75.101★ and 75.102★;
7. 2.0 Science credits, of which 1.0 must be outside Chemistry and Geology;
8. 2.0 Arts or Social Science credits;
9. 1.0 elective credit;
10. A language requirement must be met during the Third year by passing a course in or demonstrating reading proficiency in one of French, German or Russian.

A typical program is as follows:

First Year

Chemistry 65.100;
Geology 67.100;
Mathematics 69.107★ and 69.117★;
Physics 75.101★ and 75.102★;
1.0 Arts or Social Science credit.

Second Year

Chemistry 65.210 and 65.230;
Geology 67.221★, 67.223★, 67.228★ and 67.281★;
Mathematics 69.202.

Third Year

Chemistry 65.353★ and 65.354★;
Geology 67.323★ and 67.324★;
1.0 Chemistry or Geology credit;
1.0 Science credit;
1.0 Arts or Social Science credit.

Fourth Year

Chemistry 65.498 or Geology 67.498;
1.0 Chemistry credit at the 400-level;
1.0 Geology credit at the 400-level;
1.0 Science credit;
1.0 elective credit.

Combined Honours in Geology and Physical Geography

Program adviser is F.A. Michel.

A grade of C+ or better in Geography 45.105/Geology 67.105 and overall Honours standing are required for admittance to the program. Program requirements are as follows:

1. Geology 67.105/Geography 45.105†, Chemistry 65.100, Mathematics 69.107★ and 69.117★, Physics 75.101★ and 75.102★, or 75.105.
2. 5.0 credits in Geology beyond 100-level, including Geology 67.221★, 67.223★, 67.228★, 67.232★, 67.281★††, 1.5 credits in Geology at the 300-level or above, and 1.0 credit in Geology at the 400-level;
3. 5.0 credits in Physical Geography beyond First-year level from list on p. 284, including Geography 45.210★, 1.5 credit in Physical Geography at the 200-level or above, Geography 45.302★, 45.312★, 45.315★, 45.318★, 1.0 credit in Physical Geography at the 400-level;
4. Geography 45.496 or Geology 67.498;
5. 1.0 credit in Mathematics beyond the 100-level;

and/or in Computer Science. (Mathematics 69.257★ and Computer Science 95.104★ are recommended.)

6. 2.0 Arts or Social Science elective credits;†††
7. 2.0 credits chosen from Arts, Social Science, Science or Engineering.

† Students who have taken Geology 67.100 may, with permission of the program advisers, substitute Geology 67.100 for Geology 67.105/Geography 45.105.

†† Geology 67.281★ precludes additional credit for Geography 45.299★ (no longer offered).

††† A Human Geography course is recommended in the program.

Combined Honours in Physics and Geology

Program adviser is J. Blenkinsop.

A grade of C+ or better in both Geology 67.100 and Physics 75.101★ and 75.102★ together with overall Honours standing is required for admittance to the program. Program requirements are as follows:

First Year

Physics 75.101★ and 75.102★;
Geology 67.100;
Mathematics 69.107★ and 69.117★;
Chemistry 65.100;
1.0 Arts or Social Science credit.

Second Year

Physics 75.211★, 75.235★ and 75.262★;
Geology 67.221★, 67.223★, 67.228★ and 67.281★;
Mathematics 69.207★, 69.208★ and 69.241★

Third and Fourth Years

Physics:

One of 75.236★ or 75.222★;
0.5 credit from the third year lab courses: 75.307★, 75.308★ or 75.300;
0.5 credit at the 400-level not including the Honours Thesis;
1.0 credit at the 300-level or higher;
0.5 credit at the 200-level or higher.

Geology:

3.0 credits (not including the Honours Thesis) to be chosen from Geology 67.321★, 67.323★, 67.324★, 67.332★, 67.385★, 67.386★ and available Fourth-year courses. At least 0.5 credit at the 400-level is required for which Geology 67.481★ is strongly recommended. (Students should take careful note of course prerequisites when making their selection.);

2.0 optional credits (1.0 credit in Computer Science is recommended);

1.0 Arts or Social Science credit;
Honours Thesis (Physics 75.499 or Geology 67.498).

A reading proficiency in French, German or Russian must be demonstrated by the end of the Third year. The thesis must be presented and defended before an interdepartmental committee.

Combined Honours in Statistics and Geology

Program advisers are G.M. Atkinson and A.B.M.L. Kabir.

Designed for students of Honours standing desiring a comprehensive training in geostatistics, that is, the applications of statistical methods and techniques to

geological problems. Program requirements are as follows:

First Year

Mathematics 69.102 and 69.117★;
Geology 67.100;
Chemistry 65.100; and one of Biology 61.103★ and 61.104★;
Physics 75.101★ and 75.102★ (or 75.105);
Computer Science 95.104★ (or 95.107★).

Second Year

Mathematics 69.208★, 69.217★, 69.257★, 69.259★;
Geology 67.221★, 67.223★, 67.228★, 67.232★, 67.281★;
0.5 credit free option (or Computer Science 95.108★, if 95.107★ was taken in First year).

Third and Fourth Years

Mathematics 69.244★, 69.350, 70.355★, 70.452★, 70.453★, and 0.5 credit from: 69.304★, 69.381★, 69.386★.

Two of the following three blocks:

- (a) Geology 67.323★, 67.324★;
- (b) Geology 67.385★, 67.386★;
- (c) Geology 67.231★, and either 67.321★ or 67.332★.

1.5 credits in Geology at the 400-level.

Geology 67.498 Honours Thesis, or Mathematics 70.495★ Honours Project; and additional 0.5 credit in Mathematics or Statistics at the 300-level or above.
2.0 credits (Arts or Social Science).

Graduate Courses

For information on graduate courses, please consult the *Graduate Studies and Research Calendar*.

Work-Study Program in Geology

This program allows students to gain professional experience while completing an academic degree. Admission to the program requires departmental approval and is based on academic standing after completion of the First-year Science program. Applications should be made in January of the Second year. The Department will assist students in locating jobs that are related to career opportunities in geology but the Department cannot guarantee that such jobs will be available. The program is governed by the same academic regulations as regular B.Sc. programs in Geology. A typical program is shown in the table. Combined-Honours students should consult the appropriate advisers for their program in work-study.

	Year 1	Year 2	Year 3	Year 4	Year 5
<i>Fall</i>	67.100 65.100 69.107★ 69.117★ 61.103★ and 61.104★ or 75.101★ and 75.102★ or 75.105	67.221★ 67.231★ 67.223★ 67.281★ 0.5 credit Arts or Social Science 1.0 Credit 100- or 200- level Science	Work Term 3	67.321★ 67.323★ 67.385★ 0.5 credit 200-level Science 0.5 Credit Free Elective	2.0 credits Geology at 400-level 67.498 1.0 credit 200-level Science
<i>Winter</i>	1.0 credit Arts or Social Science	67.232★ 67.228★ 67.282★	67.324★ 67.332★ 67.386★ 0.5 credit 200-level Science 0.5 credit Arts or Social Science	Work Term 5	1.0 credit Free Elective
<i>Summer</i>	Work Term 1	Work Term 2	Work Term 4	Work Term 6	

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Geology 67.100**Principles of Geology**

The structure of the Earth's interior and tectonic processes; rocks, minerals and Earth resources; history of the Earth and its life. This course is restricted to students enrolled in either Science or Engineering. Students in other programs may register with permission of the Department of Earth Sciences.

Precludes additional credit for Geology 67.105.

Lecture two hours a week, tutorial one hour a week, laboratory three hours a week, two field excursions.

Geology 67.104★**Introduction to Earth Sciences**

For non-Science students, this course presents a survey of geological processes operating within the Earth and at its surface, emphasizing Earth structure, tectonics, rocks, minerals and the history of life on Earth.

Precludes additional credit for Geology 67.100 or Geology 67.105/Geography 45.105.

Not acceptable as a prerequisite for subsequent courses in Geology, nor acceptable as a Science credit for students in Science programs.

Lectures three hours a week. At least six written assignments in place of weekly laboratories.

Geology 67.105**Introduction to Geoscience**

A survey of processes operating within the Earth and at its surface: the hydrological cycle, oceans, Earth structure, tectonics, rocks, minerals, history of life on the Earth, climatic change, soils, landforms and resources. This course is designed for students who wish to understand the physical environment of the planet they inhabit. (Also listed as Geography 45.105.)

Precludes additional credit for Geology 67.100.

Lecture three hours a week, laboratory three hours a week, a field excursion.

Note:

Students wishing to continue in a Geology program may, with permission of the Department of Earth Sciences, substitute Geology 67.105 for Geology 67.100.

Geology 67.221★**Crystallography and Mineralogy**

Symmetry and classification of crystals, crystal chemistry, physical and systematic mineralogy.

Prerequisite: Geology 67.100 or 67.105; Chemistry 65.100; or permission of the Department.

Lectures three hours a week, laboratory three hours a week.

Geology 67.223★**Optical Mineralogy**

Methods of optical mineralogy and optics of the rock forming minerals.

Precludes additional credit for Geology 67.222★ (no

longer offered).

Prerequisite: Geology 67.100 or 67.105; Chemistry 65.100; or permission of the Department.

Lectures three hours a week, laboratory three hours a week.

Geology 67.228★**Petrology and Geochemistry of Igneous Rocks**

The classification of igneous rocks. The chemical characteristics of the crust and mantle. The generation and physical properties of magmas, magma emplacement of volcanic and plutonic rocks. Phase equilibrium and isotope geochemistry.

Prerequisites: Geology 67.221★ and 67.223★.

Lectures two hours a week, tutorial one hour a week, laboratory three hours a week.

Geology 67.231★**Invertebrate Paleontology and Historical Geology**

The classification, morphology, and evolutionary history of commonly preserved invertebrate phyla. Principles of paleontology and stratigraphic paleontology are presented in a historical context. Geological history of the Earth.

Precludes additional credit for Geology 67.234★ (no longer offered).

Prerequisite: Geology 67.100 or 67.105, or permission of the Department.

Lectures three hours a week and laboratory three hours a week. May involve one or more field trips.

Geology 67.232★**Concepts of Stratigraphy and Sedimentary Facies**

Concepts and methods used in the recognition and definition of stratigraphy and sedimentary facies. Physical, biological, geophysical, and chemical attributes of rocks are discussed in terms of their use in local and regional correlation.

Precludes additional credit for Geology 67.233★ (no longer offered).

Prerequisite: Geology 67.100 or 67.105, or permission of the Department.

Lectures two hours a week, laboratory three hours a week. May involve one or more field trips.

Geology 67.238★**Earth, Resources and Society**

This course is designed to enhance the students' appreciation of the resource basis of contemporary society, and to explain the role of the Earth sciences in the forecasting and mitigation of natural disasters. Topics covered in the lectures include: non-renewable resources and the physical limits of a finite Earth; energy, water and the human use of the oceans; earthquake prediction and control; volcanic eruptions; and several case histories. Students will investigate and report on aspects of these problems that relate to their own disciplines. Accepted as a free elective only in the Geology programs.

Prerequisite: Geology 67.100 or 67.105 or permission of the Department.

Lectures two hours a week, tutorial one hour a week.

Geology 67.281★**Field Geology I**

Basic geological methods applied to the field study of rocks. A mandatory two-week field camp before

classes.

Prerequisites: Geology 67.100 or Geology 67.105, completion of First-year Science, or permission of the Department.

Geology 67.282★

Field Geology II

An introduction to methods of field analysis and interpretation in deformed and metamorphosed terranes. The course includes a two-week field camp to be taken in early May.

Prerequisites: Geology 67.281★ and permission of the Department.

Lectures one hour a week, laboratory three hours a week, two-week field camp in early May.

Geology 67.321★

Sedimentary Environments

Introduction to the dynamics of sediment transport, deposition, and erosion; the connection between facies and environment; the common carbonate and siliciclastic environments that are found in modern and ancient continental to deep-marine settings, as well as coal, phosphorite, and Fe-rich sediments. Sedimentary facies analysis will be discussed in the context of sequence stratigraphy and paleogeography.

Precludes additional credit for Geology 67.334★ (no longer offered).

Prerequisite: Geology 67.232★ or permission of the Department.

Lectures two hours a week and laboratories three hours a week. May involve one or more field trips.

Geology 67.323★

Petrology and Geochemistry of Metamorphic Rocks

The classification of metamorphic rocks. The origin of metamorphic rocks with emphasis on the chemical and mineralogical characteristics of these rocks and the processes involved in their evolution. Related phase equilibria and thermodynamics.

Prerequisite: Geology 67.228★.

Lectures two hours a week, laboratory three hours a week, one day long field trip.

Geology 67.324★

Mineral Deposits

Metallic and non-metallic ore deposits, property valuation, mineral economics, exploration geochemistry, stable isotope and trace element geochemistry, partition coefficients.

Prerequisites: Geology 67.321★ and 67.323★; or permission of the Department.

Lectures two hours a week and laboratory three hours a week, one day long field trip.

Geology 67.332★

Evolutionary Paleoeology

Principles of ecology and paleoeology applied to the stratigraphic succession of fossil communities. Current concepts of micro- and macro-evolution and extinction and the synthesis of key paleontological events through the Phanerozoic are emphasized.

Precludes additional credit for Geology 67.333★ (no longer offered).

Prerequisite: Geology 67.231★ or permission of the Department.

Lectures two hours a week, laboratory three hours a week.

Geology 67.383★

Gemmology

Gem identification, occurrence, genesis, synthesis and evaluation. Testing instruments and techniques. Crystallographic, optical, physical and chemical properties of gemstones.

Prerequisites: Geology 67.221★ and 67.223★ or permission of the Department. Open to Science students with permission of their department, but not as a Science Continuation course.

Lectures and laboratories, five hours a week.

Geology 67.385★

Geodynamics

The structure, composition, and rheological properties of the Earth: lithosphere, mantle and core. Plate tectonics and its relation to geophysical fields, driving mechanisms, and processes at plate boundaries and in plate interiors.

Precludes additional credit for Geology 67.380 or 67.382★ (no longer offered).

Prerequisites: Geology 67.228★, 67.281★ and 67.282★; or permission of the Department.

Lectures two hours a week, laboratory three hours a week.

Geology 67.386★

Structural Geology

Structure and tectonic evolution of mountain belts; analysis of strain and fabrics in a variety of crustal settings. Applications to geological engineering and mineral and petroleum exploration.

Precludes additional credit for Geology 67.380 or 67.381★ (no longer offered).

Prerequisites: Geology 67.385★, or permission of the Department.

Lectures two hours a week, laboratory three hours a week.

Geology 67.403★

Directed Studies in Geology

One or more special projects based on a total of at least 15 days field research, laboratory investigations, or some combination of these components. Credit for field components may be accrued during the Third year of a student's program, but laboratory projects will be arranged during the Fourth year. Assessment to be based on written reports and oral examinations. Travel expenses for any long-distance travel are to be borne by student.

Prerequisites: Honours standing and permission of the Department.

Geology 67.415★

Quaternary Geography

Offered in the Department of Geography as Geography 45.411★.

Lectures three hours a week, one term only.

Geology 67.417★

Geotechnical Mechanics

Offered in the Department of Civil and Environmental Engineering as Engineering 82.328★. (Also listed as Geography 45.417★.)

Geology 67.419★

Hydrology

Offered in the Department of Civil and Environmental Engineering as Engineering 82.441★. (Also listed as Geography 45.413★.)

Lectures two hours a week, problems, analyses three hours alternate weeks.

Geology 67.421★

Ore Mineralogy

Structural principles, crystal chemistry and classification of ore-forming oxides, sulfides, sulfosalts, uranium and precious-metal minerals. Principles of ore microscopy, analytical and identification techniques.

Prerequisite: Geology 67.324★.

Geology 67.422★

Metallic Mineral Deposits

Ore deposits studied from their relationships to the petrologic cycle. Ore genesis interpreted in light of field studies of local deposits, reflected light microscopy of ore suites, description of classic deposits, phase equilibria and isotopic evidence.

Prerequisites: Geology 67.323★ and 67.324★.

Lectures, seminars and laboratories five hours a week.

Geology 67.423★

Petroleum Geology

Occurrence and nature of petroleum; principles of petroleum geology; exploration and production, and evaluation methods; examples of oil and gas fields with emphasis on Canadian occurrences.

Prerequisite: Geology 67.321★.

Lectures, seminars and laboratories five hours a week.

Geology 67.424★

Physical Hydrogeology

An introduction to the principles governing the movement of groundwater through various geological materials. The exploration, development and use of groundwater as a resource by man, and groundwater-related geohazards are examined.

Precludes additional credit for Geology 67.420★ (no longer offered).

Prerequisite: Geology 67.232★ or permission of the Department.

Geology 67.425★

Geochemistry of Waters

The principles and processes controlling the chemical quality of groundwater and the subsequent effects on water quality due to human activities. Isotope geochemistry of the hydrologic cycle and dissolved constituents in groundwater.

Precludes additional credit for Geology 67.420★ (no longer offered).

Prerequisites: Geology 67.424★ and Chemistry 65.100 or permission of the Department.

Geology 67.428★

Property Valuation and Mineral Economics

Sampling, ore calculations, drilling and mining methods, property valuation, economics of specific mineral industries, national and international trade and mineral policies, taxation and financing of the mineral industry.

Prerequisite: Geology 67.324★ or permission of the Department.

Geology 67.431★

Microfossils

Oceanological and marine geological processes; micro-organisms of the oceans; microfossils: their evolution, biostratigraphic and paleoecologic significance and economic use; microfaunal correlation in petroleum geology. Laboratory: Examination and identification of microfossils. Each student is required to present at least one seminar paper.

Prerequisite: Geology 67.231★ or permission of the Department.

Lectures and laboratories five hours a week.

Geology 67.432★

Marine Geology

Development of ocean basins, physical and chemical oceanographic processes, paleoceanographic changes of watermass distribution and circulation patterns, interaction between atmosphere and ocean, marine sedimentation, offshore seismic stratigraphy, marine habitats, marine instrumentation.

Prerequisites: Geology 67.231★, 67.232★, 67.321★ and 67.385★; or permission of the Department.

Lectures, seminars and laboratories five hours a week.

Geology 67.442★

Advanced Structure

A study of the structural evolution of mountain belts, with emphasis on field methods.

Prerequisites: Geology 67.385★ and 67.386★, or permission of the Department.

Lectures, seminars and laboratories five hours a week.

Geology 67.451★

Igneous Petrology

Genesis of plutonic and volcanic rocks, their spatial and petrochemical relationships and crust-mantle differentiation; associated problems in phase equilibria and isotopic studies. One day-long field trip.

Prerequisite: Geology 67.323★.

Lectures and laboratories five hours a week.

Geology 67.452★

Metamorphic Petrology

Field relations of metamorphic rocks; graphical treatment and interpretation of mineral assemblages. Laboratory: Petrographic techniques, study of rock suites.

Prerequisite: Geology 67.323★.

Geology 67.463★

Sedimentology

Review of sedimentary processes. Composition, texture, primary structure and origin of the major sedimentary rock types; dispersal patterns, sedimentary trends and lithofacies. Laboratory: textural analyses, heavy minerals, statistical analysis of data, and thin-section petrography.

Prerequisite: Geology 67.323★ or 67.321★.

Geology 67.464★

Precambrian Geology

Introduction to problems of the Precambrian, empha-

sizing both classical and current North American studies. Laboratory: research methods, field trips, petrologic studies of representative rock suites.
Prerequisite: Geology 67.323★.

Geology 67.481★

Physics of the Earth

The physical properties of the solid Earth. Gravitational, magnetic and palaeomagnetic fields; seismology and earthquake occurrence; heat flow and thermal history. Geodynamic processes.

Prerequisites: Geology 67.385★ and 67.386★, or permission of the Department.

Geology 67.482★

Geochemistry and Isotope Geology

Chemical evolution of the Earth, meteorites, development of the continental crust, origin of the atmosphere and hydrosphere, radiometric dating, stable isotopes, origin of life.

Prerequisites: Geology 67.323★ and 67.324★ or permission of the Department.

Lectures and seminars five hours a week.

Geology 67.483★

Applied Geochemistry

Chemical and physical factors responsible for the distribution and migration of the elements in the lithosphere, hydrosphere, atmosphere and biosphere; geochemistry applied to mineral exploration; methods of analysis. Laboratory: determination of trace amounts of the common metallic elements in soils and stream sediments; case histories, research problems, field trips.

Prerequisites: Geology 67.228★, 67.324★, Chemistry 65.100; or permission of the Department.

Geology 67.484★

Exploration Geophysics

An introduction to the fundamental theory and application of geophysics to economic and structural geology. Methods studied are electrical, gravitational, magnetic, radioactive and seismic. Case history studies integrate the application of the methods.

Prerequisites: Geology 67.385★ and 67.386★,

Physics 75.101★ and 75.102★, or 75.105; or permission of the Department.

Lectures and problems three hours a week.

Geology 67.485★

Data Integration and Analysis in the Geosciences

Methods of data integration and analysis of geological, geochemical, and geophysical data. The course will acquaint students with procedures for, and problems of, the handling and interpreting of quantitative data derived from different branches of the Earth sciences. Among the topics to be covered are the acquisition, analysis, modelling, and representation of data, with particular emphasis on spatial data in a Geographical Information System environment.

Prerequisites: Computer Science 95.104★ and Geology 67.228★; or permission of the Department.

Lectures and laboratory five hours a week.

Geology 67.487★

Field Geology III

A two-week field camp designed to develop the student's ability to observe, analyze and interpret geological field data in the light of theoretical and experimental knowledge. Written reports, including maps, sections and diagrams, are submitted during the course. Selected areas. A portion of the cost is borne by the student.

Prerequisites: Completion of the Geology core program or its equivalent, Geology 67.282★ and permission of the Department.

Geology 67.498

Honours Thesis

The B.Sc. thesis is to be based on a study undertaken before or during the final University year, in the field and/or the Department. Before registering in the course, the student must first have obtained approval of the topic from a supervisor and the course co-ordinator. The thesis is equivalent to one credit, with an average of eight hours work per week. It shall be defended orally; a final draft suitable for defence shall normally be submitted to the co-ordinator by the deadline for Winter term assignments.

(Social Sciences)

C876 Loeb Building
Telephone: 520-3744

Academic Administration

Chair
D.G. McFetridge

Supervisors of Graduate Studies
Ph.D. Studies, to be announced
P.N. Rowe, M.A. Studies

Director of Doctoral Studies, Joint Ph.D Program with the University of Ottawa
To be announced

Supervisor of Honours Studies
L.L. Schembri

Supervisor of Pass Studies
E.G. Davis

Teaching Staff

Professor Emeritus
E.G. West

Professors
A.K. Acheson
J.I. Bernstein
R.A. Brecher
R.L. Carson
E.U. Choudhri
W.I. Gillespie
K.A.J. Hay
K. Marwah
D.G. McFetridge
C.H. McMillan
S.B. Park
A.R.M. Ritter
D.A. Smith

Associate Professors
Z. Chen
E.G. Davis
F.S. Demers
M. Demers
B. Erard
J.S. Ferris
C.L. Johnson
J.C. McManus
S. Power
P.N. Rowe
H. Schaller
L.L. Schembri

Assistant Professors
K.G. Armstrong
A. Thompson
F. Woolley

Distinguished Research Professors
C.J. Maule
T.K. Rymes

Adjunct Professors
J. Baldwin
H.E. English
J.A. Galbraith
R.F. Neill

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Mathematics Requirements

Students intending to pursue courses in Economics beyond the introductory level are required to take Mathematics 69.007★ if they lack an OAC in Calculus, and 69.017★ if they lack an OAC in Algebra and Geometry.

Pass Programs

Pass Program in Economics

Students are normally permitted to major in Economics only if they have obtained a grade of C- or better in Economics 43.100. The requirement for a Pass degree is Mathematics 69.109★ and 69.119★ and at least 6.0 credits in Economics: Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 1.0 400-level credit, and 1.0 other credit at the 200-, 300- or 400-level. The student's program for the Second and Third years must be approved by the Supervisor of Pass Studies for the Department.

A Pass student must maintain a GPA of 4.0 or better to remain in the program. For purposes of determining a Pass student's average at graduation, only the 6.0 required credits in Economics (i.e. excluding 69.109★ and 69.119★) will be considered.

Combined Pass Program

Students in Combined Pass programs will complete Mathematics 69.109★ and 69.119★ and 5.0 credits in Economics: Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 1.0 400-level credit in Economics and 1.0 Economics credit chosen in consultation with the Supervisor of Pass Studies. Students in the Combined Pass program must maintain a GPA of 4.0 or better to remain in the program.

Honours Programs

The Honours programs may be entered in First year or by transfer from the Pass programs if minimum Honours standing has been obtained. The student's

program for the Second and subsequent years must be planned in consultation with the Supervisor of Honours Studies of the Department.

Honours in Economics

The requirement for an Honours degree is a minimum of 20.0 credits with at least 9.0 credits in Economics and 1.0 credit in Mathematics. The Honours requirements include: Mathematics 69.109★ and 69.119★ or equivalent; Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.240★, 43.420★, 43.421★, 43.476★, 43.490, plus 2.0 additional credits in Economics at the 400-level.

An Honours Essay (Economics 43.498) with a grade of *B-* or better may be written to earn 1.0 credit at the 400-level, and can replace the Economics 43.490 requirement. Students who choose to do the Honours Essay must have a detailed outline of the Essay approved by their adviser and by the Honours Supervisor before the last day for withdrawal from full-credit courses. In the absence of such an approved outline, the Department may require the student to withdraw from the Honours Essay.

For the purposes of determining an Honours student's standing at graduation, only required credits in Economics (i.e. excluding Mathematics 69.109★ and 69.119★) will be considered. If a student has taken more than the minimum number of 20.0 credits, the lowest grades among optional credits taken over the minimum will be disregarded in computing final standing.

Normal Course Pattern in Honours Economics

First year: Economics 43.100, Mathematics 69.109★ and 69.119★.

Second year: Economics 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.240★.

(Students should note that: an average grade of *C+* or better in 43.202★ and 43.203★ is required to take 43.420★; an average grade of *C+* or better in 43.212★ and 43.213★ is required to take 43.421★; a grade of *C+* or better in 43.220 is required to take 43.476★.)

Third year: Economics 43.420★ and 43.421★, 43.476★, 0.5 additional Economics credit at the 400-level.

Fourth year: Economics 43.490, 1.5 Economics credits at the 400-level.

Other course patterns may be arranged after consultation with the Supervisor of Honours Studies.

Combined Honours

Students may apply for Combined Honours in Economics and another discipline. Students should consult the Supervisor of Honours Studies.

Students in the Combined Honours program are normally required to take 1.0 credit in Mathematics and at least 7.0 credits in Economics, of which 2.5 credits are at the 400-level. The requirements are: Mathematics 69.109★ and 69.119★ or equivalent; Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.240★, 43.420★, 43.421★, 43.490, and an additional 0.5 credit at the 400-level.

The Honours Essay (Economics 43.498) with a weight of 1.0 credit, requiring a grade of *B-* or better, may be written in Economics and can replace the Economics 43.490 requirement.

The minimum of 20.0 credits and the procedure for computing final standing described above apply to the Combined Honours program.

The Combined Honours programs in four related fields are described in greater detail below.

Normal Course Pattern in Combined Honours in Economics

First year: Economics 43.100; Mathematics 69.109★ and 69.119★.

Second year: Economics 43.202★, 43.203★, 43.212★, 43.213★, 43.220 (or recognized equivalent), 43.240★.

Third year: Economics 43.420★ and 43.421★.

Fourth year: Economics 43.490 and 1.0 additional 0.5 credit in Economics at the 400-level.

Other course patterns may be arranged after consultation with the Supervisor of Honours Studies.

Combined Honours in Economics and Political Science

Students intending to follow this program should take Mathematics 69.109★ and 69.119★ and Economics 43.100 or Political Science 47.100 (or preferably both) in the First year. The choice of courses in subsequent years will be subject to the approval of the two departments. The Honours requirements include at least an additional 6.0 credits in Economics and 6.0 credits in Political Science, one of which must be Political Science 47.498 or Economics 43.498 to be taken in the student's final year. These will be arranged so that students may transfer either to full Honours in Political Science or to full Honours in Economics at the end of the Third year if they wish to specialize more intensively. Students must also meet the language requirements of the Department of Political Science. Economics 43.240★, 43.420★ and 43.421★ are required.

Combined Honours in Economics and Mathematics

The Economics requirements are: Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.420★, 43.421★, 43.490 and 2.0 credits at the 400-level. Students in Combined Honours in Economics and Mathematics are not permitted to take Economics 43.240★. The Mathematics requirements of the program are considered to provide more than equivalent material. The Mathematics requirements are: Computer Science 95.107★ and 95.108★, Mathematics 69.102, 69.112 (or their equivalents), Mathematics 70.200, 70.210, 70.259★, 70.260, 70.301★, 70.350, at least one of 70.302★ or 70.308★, 0.5 credit at the 300-level or above, and 1.0 credit at the 400-level.

Combined Honours in Economics and Statistics

The Economics requirements are: Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.420★, 43.421★, 43.477★, 43.490, 2.0 credits at

the 400 level. The 400 level courses of particular interest are: 43.405★, 43.406★, 43.407★, 43.439★, 43.483★ and 43.484★. Students in Combined Honours in Economics and Statistics are not permitted to obtain credit for 43.240★. The Mathematics requirements of the program are considered to provide more than equivalent material. (See p.)

Combined Honours in Economics and Journalism

Students in this program are required to complete a total of 20 credits (20.5 credits if admitted prior to 1995-96) and may choose to graduate with either a B.A. (Honours) or B.J. (Honours). The Economics requirements are Mathematics 69.109★ and 69.119★, Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220, 43.240★, 43.420★, 43.421★, 43.490; 1.0 approved credit in Economic History and 0.5 credit option in Economics at the 400-level. The Journalism requirements are: a language course, preferably French, (acceptable 100-level French courses are one of French 20.120, 20.130, 20.140 or 20.150), Journalism 28.100, 28.221, 28.225★, 28.251★, 28.400, 28.421, and two of 28.425★, 28.426★, 28.427★, 28.428★.

Combined Honours in Economics and Sociology

The Economics requirements are: Mathematics 69.109★ and 69.119★, Economics 43.100, 43.202★, 43.203★, 43.212★, 43.213★, 43.220 (or Sociology 53.370), 43.240★, 43.420★, 43.421★, 43.490 and a 0.5 credit at the 400-level.

See also p. 487 and consult the Department of Sociology and Anthropology.

Graduate Program

The Department of Economics offers studies leading to the degree of Master of Arts and to the degree of Doctor of Philosophy. For further details consult the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Economics 43.100

Introduction to Economics

An introduction to the major tools and policy problems of economics. Economic analysis is applied to a variety of contemporary problems such as pollution, poverty, the control of monopoly, unemployment, inflation and international economic problems.

Lectures three hours a week. Discussion groups (one hour) may be arranged.

Economics 43.201★

Intermediate Microeconomics for Non-Majors

The main topics in microeconomic theory with illustrations of their applications. Not open to students in Economics or the Bachelor of Commerce program. Credit will not be given for both Economics 43.201★ and either of 43.202★ or 43.203★.

Prerequisite: Economics 43.100 or permission of the Department.

Lectures and discussions three hours a week.

Economics 43.202★

Intermediate Microeconomics I

An analysis of consumer demand, production, costs and an introduction to market structures, with special reference to the determination of conditions which maximize social welfare.

Credit will not be given for both Economics 43.201★ and 43.202★.

Prerequisites: Economics 43.100 (grade of C- or better); and Mathematics 69.109★, which may be taken concurrently with Economics 43.202★.

Lectures three hours a week.

Economics 43.203★

Intermediate Microeconomics II

An analysis of distribution, market structures and general equilibrium theory, with special reference to the determination of conditions that maximize social welfare.

Credit will not be given for both Economics 43.201★ and 43.203★.

Prerequisite: Economics 43.202★.

Lectures three hours a week.

Economics 43.211★

Intermediate Macroeconomics for Non-Majors

The main topics in macroeconomic theory with illustrations of their application. Not open to students in Economics or the Bachelor of Commerce program. Credit will not be given for both Economics 43.211★ and either of 43.212★ or 43.213★.

Prerequisite: Economics 43.100 or permission of the Department.

Lectures and discussions three hours a week.

Economics 43.212★

Intermediate Macroeconomics I

An examination of the standard macroeconomic model of a closed economy, emphasizing both the aggregate demand and the aggregate supply side of the economy. The model is used to analyze basic macroeconomic problems and evaluate proposed solutions of these problems.

Credit will not be given for both Economics 43.211★ and 43.212★.

Prerequisite: Economics 43.100 (grade of C- or better); and Mathematics 69.109★, which may be taken concurrently with Economics 43.212★.

Lectures three hours a week.

Economics 43.213★

Intermediate Macroeconomics II

An extension of the standard macroeconomic model to include topics such as macroeconomic theory and policy in an open economy, theoretical development and empirical analysis of basic macro relationships,

the short-run dynamics of wage-price adjustment and economic growth.

Credit will not be given for both Economics 43.211★ and 43.213★.

Prerequisite: Economics 43.212★

Lectures three hours a week.

Economics 43.220

Statistical Methods in the Social Sciences

An introduction to statistical inference. Topics covered include probability theory, estimation, sampling distributions, two-population inference, tests of goodness of fit and independence, correlation, simple and multiple linear regression with residual analysis, and analysis of variance.

Precludes additional credit for Mathematics 69.250, 69.257★, 69.259★, 69.266★, 69.267★, Psychology 49.300, and Sociology 53.370.

Prerequisites: Mathematics 69.109★ and 69.119★ or equivalent and one of Economics 43.100 (with a grade of C- or better), Political Science 47.100 or Sociology 53.100; or permission of the Department. These courses may be taken concurrently with Economics 43.220. For students in the Bachelor of International Business program, the prerequisite is successful completion of 42.173.

Lectures three hours a week, laboratory two hours a week.

Economics 43.235

Canadian Economic History

A historical survey of persistence and change in the Canadian economy from the eighteenth to the twentieth centuries. (Also listed as History 24.235.)

Prerequisite: Economics 43.100 or permission of the Department.

Economics 43.240★

Economic Applications of Mathematics

Optimization, with and without constraints, and comparative static methods applied to models such as utility maximization and least cost production; homogeneous functions; compounding and exponential functions; economic models involving integration; the use of matrix algebra and differential equations.

Prerequisites: Economics 43.100 and Mathematics 69.109★ and 69.119★. Enrollment in this course is limited to students whose major is Economics or Business.

Economics 43.250★

Introduction to Business Finance

A study of business firms' financing and dividend policy decisions, cost of capital and short-term asset management problems. (Also listed as Business 42.250★.)

Prerequisites: Economics 43.100, Business 42.104★ and 42.105★ (or 42.101★ and 42.102★) and Mathematics 69.109★ and 69.119★ or equivalent (a grade of C- or better in 43.100 and 42.104★ and 42.105★, or 42.101★ and 42.102★).

For Honours International Business students, Economics 43.100 and Business 42.173 and 42.270★. For students in the Management Concentration in Engineering, Business 42.270★, Engineering 91.380★ and Mathematics 69.104★ and 69.114★.

Lectures three hours a week.

Economics 43.305★

Selected Topics in Economic History

Examination of the economic development of North America or Europe or other possible selected sets of countries. Countries examined vary from year to year.

Prerequisite: Economics 43.100 or permission of the Department.

Economics 43.320★

Economics of Information and the Media

An introduction to the economics of information and the media, with a focus on the analysis of production and distribution of information, the application of theory to selected communications-media industries in Canada, and the analysis of existing Canadian policies.

Prerequisite: Economics 43.100.

Economics 43.324★

An Economic Analysis of Law

An introduction to the application of economic principles and methodology to a variety of legal problems with particular emphasis on the theory of property rights and the allocation of resources.

Prerequisite: Economics 43.100.

Economics 43.325

The Economic Development of Canada

A general survey of Canadian economic development from 1534 to 1970.

Prerequisite: Economics 43.100 or permission of the Department.

Economics 43.326★

Economic Theories of Federalism

An introduction to the economic dimensions of federalism, with particular reference to Canadian experience. The issues to be covered include: fiscal federalism; the impact of federal economic policies on provincial economies; the consequences of province-serving policies (trade barriers, impediments to factor flows, etc.) for national economic performance; decentralization possibilities for fiscal and economic development policies. Analytical tools to be developed include interregional trade models, interregional input-output analysis and interregional balance of payments models.

Prerequisite: Economics 43.100. Students are encouraged to take Political Science 47.301★ to obtain an appreciation of the political dimension of many of these issues.

Economics 43.330★

Public Policy Toward Business

This course examines the interaction of government and business with an emphasis on the Canadian economy. The course examines the reasons for government involvement in the direction of certain markets and then proceeds with a study of selected public policy areas. Topics covered may include competition policy, the direct regulation of firms by boards and commissions (e.g. the Canadian Radio-Television and Telecommunication Commission and the National Energy Board), environmental regulation and public enterprise.

Prerequisite: Economics 43.100.

Lectures three hours a week.

Economics 43.335

Political Economy in the Modern State

An examination of the role of government in the economy, with special emphasis on alternate forms of social co-ordination and the advantages and disadvantages of each form in the Canadian system.

Prerequisite: Economics 43.100.

Lectures two hours a week.

Economics 43.341★

Regional Economics

An examination of the issue of unequal distribution of economic activity between spatially defined regions. Emphasis is placed on an evaluation of the current pattern in Canada since World War II, considering "natural" adjustment mechanisms, policy tools that have been developed, and the outlook for the future. Lessons are drawn from empirical and theoretical studies of the issue on other economies.

Prerequisite: Economics 43.100.

Lectures three hours a week.

Economics 43.342★

Special Studies in Economics

Content of this course varies year by year, topics to be determined by the instructor invited to offer the course.

Prerequisite: Economics 43.100.

Economics 43.344★

Economic Thought and Policy in Canada

An account of the interrelationship between economic theories expounded in Canada and their issue in national policy.

Prerequisite: An introductory course in one of the social sciences or Canadian history.

Economics 43.346★

Agricultural Economics

An examination of the agricultural industry in the national economy and in low-income societies. The course emphasizes the working out of the basic forces that determine supply-demand for the industry and the functional distribution of income among the factors of production. The place of institutions is examined and public policy is critically reviewed.

Prerequisite: Economics 43.100.

Economics 43.347★

Public Finance: Taxation

The role and nature of the government sector in the economy, the principles of taxation, tax equity, the incidence and excess burden of taxes, the structure of taxes in the Canadian economy, the role of personal, corporate, sales and wealth taxes in the economy, fiscal stabilization policy, and the economics of public debt.

Precludes additional credit for Economics 43.303★ (no longer offered) and 43.441★.

Prerequisite: Economics 43.100.

Economics 43.348★

Public Finance: Expenditure

The role and nature of the government sector in the economy, the theory of public goods, the equity and efficiency effects of public expenditures, voting rules and fiscal politics, techniques of public expenditure analysis, and intergovernmental fiscal relations.

Precludes additional credit for Economics 43.303★ (no longer offered) and 43.442★.

Prerequisite: Economics 43.100.

Economics 43.350★

Corporate Finance

An examination of the major issues in corporate finance and applied financial management. Topics include: introduction to portfolio theory, the capital asset pricing model, cost of capital, capital structure and dividend policy, lease financing, capital budgeting under uncertainty, mergers and consolidations. (Also listed as Business 42.350★.)

Prerequisites: Economics 43.202★, 43.250★, and 43.220 or Mathematics 69.267★.

Lectures two hours a week.

Economics 43.351★

Principles of Investments

Procedures and methods of investment analysis. The stock and bond markets. Government regulation of securities markets. Valuation of common stocks and fixed income securities. Options, warrants, convertibles and commodities. (Also listed as Business 42.352★.)

Prerequisites: Economics 43.250★, and 43.220 or Mathematics 69.267★.

Lectures two hours a week.

Economics 43.356★

Introduction to Labour Economics

Basic principles of labour economics covering market, institutional and sociological forces. The neoclassical and alternative models are examined in light of empirical evidence. A number of contemporary issues are considered such as: technological change and labour demand, two-tiered wage systems, investment in human capital, the firm's internal wage structure, market discrimination, female labour-force entry, the wage/price spiral, household labour supply, union wage concessions, occupational segregation, and bargaining models of wage determination.

Prerequisite: Economics 43.100.

Economics 43.357★

Introduction to Industrial Relations

An introduction to industrial relations covering such topics as: industrial relations systems, the functioning of trade unions, collective bargaining in Canada and Canadian public policy in industrial relations. (Also listed as Business 42.317★.)

Prerequisite: Economics 43.100.

Lectures three hours a week.

Economics 43.360★

Topics in International Economics

Special topics in international trade are examined. Among possible areas to be considered are theory and policy in international trade, finance, investment and development. Intended for students planning to take only one half credit in international economics at the 300-level. More comprehensive coverage of international economics may be achieved by taking both Economics 43.361★ and 43.362★.

Precludes additional credit for Economics 43.361★, 43.362★, 43.461★, and 43.462★.

Prerequisite: Economics 43.100 or permission of the Department.

Lectures three hours a week.

Economics 43.361★**Introduction to International Trade**

An extension of the basic principles of economics to international trade. Topics covered include the theory of international specialization, tariffs and other barriers to trade, trade liberalization and economic integration, international movements of labour and capital, trade and development.

Precludes additional credit for Economics 43.360★ and 43.461★.

Prerequisite: Economics 43.100.

Lectures three hours a week.

Economics 43.362★**International Monetary Problems**

A discussion of the theory and institutions of the international monetary system, and the related balance of payments problems of nation states.

Precludes additional credit for Economics 43.360★ and 43.462★.

Prerequisite: Economics 43.100.

Lectures three hours a week.

Economics 43.363★**Introduction to Economic Development**

A discussion of the principles of economic development. Application to the problems of the developing countries.

Prerequisite: Economics 43.100.

Lectures three hours a week.

Economics 43.367★**Monetary and Financial Institutions**

This course examines the behaviour of financial intermediaries and institutions, such as the Bank of Canada, banks and trust companies, and regulatory bodies such as the Canada Deposit Insurance Corporation and the Superintendent of Financial Institutions.

Prerequisite: Economics 43.100.

Lectures three hours a week.

Economics 43.370★**The Economics of Transition**

A survey of the theoretical and policy issues associated with the transition from an economics system based heavily on state ownership and central planning to a more mixed ownership structure and to resource allocation through the mechanism of the market. The course will begin with a critique of "classical socialism" and then examine the main processes of transition, in concept and implementation, comparing the experiences of individual countries in Central and Eastern Europe, the former Soviet Union and Asia.

Precludes additional credit for Economics 43.371★ and 43.372★ (both no longer offered).

Prerequisite: Economics 43.100

Lectures three hours a week.

Economics 43.380★**Topics in Canadian Economic Policy**

Economic analysis applied to selected policy areas, issues or institutions. One or more of the following topics may be dealt with: decision-making by bureaucratic institutions, policy problems arising from poverty, the economics of natural resources and pollution, urban economics.

Prerequisite: Economics 43.100.

Economics 43.385★**The Economics of Natural Resources**

This course is concerned with the application of economic analysis to questions concerning natural-resource use, management and conservation, as well as market failures and environmental effects. Policy problems relating to natural resources are discussed.

Prerequisite: Economics 43.100.

Economics 43.386★**Environmental Economics**

This course deals with the application of microeconomic analysis to environmental issues. Frameworks for measuring environmental costs and benefits are assessed. The comparative efficiency properties of alternative pollution control policies are reviewed. Applications of the theory are developed in the context of air and water pollution as well as for global environmental problems such as ozone depletion and global warming.

Prerequisites: Economics 43.100 or Engineering 91.380★.

Lectures three hours a week.

Economics 43.404★**Operations Research I**

Linear programming, duality, sensitivity analysis, transportation and network problems. Both theory and a wide range of applications are studied.

Precludes additional credit for Business 42.230★ and Mathematics 69.381★.

Prerequisites: Mathematics 69.109★ and 69.119★ (grade of C- or better in each course).

Lectures three hours a week.

Economics 43.405★**Operations Research II**

Dynamic programming, inventory models, queuing, simulation, non-linear programming. (Also listed as Business 42.435★.)

Prerequisites: Economics 43.404★, or Business 42.230★, or Mathematics 69.381★, and Economics 43.220 (grade of C- or better) or Mathematics 69.267★ (grade of C- or better).

Lectures three hours a week.

Economics 43.406★**Economics of Uncertainty and Information**

An exploration of how uncertainty, imperfect information and asymmetric information affect the allocation of resources and the performance of markets and alternative co-ordinating mechanisms. (See also Business 42.439.)

Prerequisites: Economics 43.220 or Mathematics 69.266★ and 69.267★, and Economics 43.202★, with a GPA of 4.0 or better on these prerequisites.

Economics 43.407★**Statistical Decision Theory**

An examination of Bayesian and classical approaches to decision-making under uncertainty for individuals and firms. (See also Business 42.439.)

Prerequisite: Economics 43.220 or Mathematics 69.266★ and 69.267★ (grade of C- or better).

Students are advised that it is preferable to take Economics 43.406★ prior to 43.407★.

Economics 43.408★

Advanced Corporate Finance

An in-depth examination of some of the major theoretical issues in corporate finance. This course requires analyses and presentations of both articles from the finance literature and case studies. (Also listed as Business 42.450★.)

Prerequisite: Economics 43.350★ (grade of C- or better).

Lectures two hours a week.

Economics 43.410★

Finance and Capital Markets

The workings and structure of Canada's capital markets with particular reference to differing classes of institutional lenders and borrowers; relationships of non-bank financial intermediaries to the banking system, regulatory agencies and the public, the impact of these institutions on corporate financial and national economic policy, access to foreign capital markets and external financing of Canadian economic development. (Also listed as Business 42.453★.)

Prerequisites: Economics 43.202★, 43.203★, 43.212★, and 43.220 or Mathematics 69.267★ (a grade of C- or better is required in each course.)

Lectures and seminars three hours a week.

Economics 43.411★

Investment Management

Analysis of investment requirements for individuals and institutional investors: liquidity, risk and return; portfolio design, construction, management and control; performance measurement; capital market theory. (Also listed as Business 42.452★.)

Prerequisite: Economics 43.351★ (grade of C- or better).

Lectures and seminars two hours a week.

Economics 43.415

History of Economic Thought

The crucial achievements in economic theory and doctrine in the nineteenth and twentieth centuries are studied. Special emphasis is given to the interrelationship between the social environment and economic thought, especially to the role of economics in the development of the national state and international institutions.

Also offered at the graduate level, with additional or different requirements, as Economics 43.521★ and 43.522★, for which additional credit is precluded.

Prerequisite: Economics 43.202★, 43.203★, 43.212★ and 43.213★, with an average grade of C- or better, or permission of the Department.

Lectures and seminars three hours a week.

Economics 43.420★

Microeconomic Theory

Theory of individual economic behaviour, theory of exchange and production, general equilibrium, alternative theories of pricing, allocation and distribution. Elementary tools of mathematics are employed in the exposition of most topics.

Prerequisites: Economics 43.202★ and 43.203★, with an average grade of C+ or better, 43.240★ (with a grade of C- or better) and 43.220 (43.220 may be taken concurrently with 43.420★).

This course is required for students in the Honours program in Economics.

Lectures three hours a week.

Economics 43.421★

Macroeconomic Theory

Macroeconomic theory and its implications for economic policy are examined in this course. Emphasis is placed on major controversies in the field, with consideration given to topics such as: determination of national income, employment, price level and interest rates; commodity, labour and asset market behaviour; and fiscal and monetary management for economic stabilization. Elementary tools of mathematics are employed in the exposition of most topics. Prerequisites: Economics 43.212★ and 43.213★, with an average grade of C+ or better, 43.240★ (with a grade of C- or better) and 43.220 (43.220 may be taken concurrently with 43.421★).

This course is required for students in the Honours program in Economics.

Lectures three hours a week.

Economics 43.426★

Topics in North American Economic History

An examination of methodology applicable to the analysis of economic history. Intensive examination of selected topics in North American economic history.

Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.213★, with an average grade of C- or better on these prerequisites, or permission of the Department.

Economics 43.427★

Topics in European Economic History

An examination of methodology applicable to the analysis of economic history. Intensive examination of selected topics in European economic history.

Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.213★, with an average grade of C- or better on these prerequisites, or permission of the Department.

Economics 43.431★

Industrial Organization I - Theory and Evidence

An examination of various theoretical and empirical studies of firm and market organization with emphasis on the pricing, advertising, investment and locational behaviour of firms in imperfectly competitive markets.

Precludes additional credit for Economics 43.430 (no longer offered).

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★ with an average grade of C- or better on these prerequisites.

Lectures and seminars three hours a week.

Economics 43.432★

Industrial Organization II - Policy and Applications

This course extends the theoretical material developed in Economics 43.431★ and applies it to examine public policies toward business in Canada and in other market economies with emphasis on policies relating to regulation, competition, and innovation.

Precludes additional credit for Economics 43.430 (no longer offered).

Prerequisite: Economics 43.431★.

Lectures and seminars three hours a week.

Economics 43.436★**Employment Economics and Labour Policy**

A discussion of selected topics in labour economics with emphasis on the North American economy. Price theory is applied to the labour market. Emphasis is placed upon public policies that affect labour market performance. Topics of current interest are examined in light of recent research findings.

Precludes additional credit for Economics 43.435 (no longer offered).

Prerequisites: Economics 43.202★ (or Economics 43.201★) with a grade of C- or better or permission of the Department.

Lectures three hours a week.

Economics 43.439★**Applied Industrial Economics**

This course examines the empirical application of microeconomics, with special emphasis on the Canadian economy. Topics include: consumer demand, firm production and investment, and industrial and trade structure.

Also offered at the graduate level, with additional or different requirements, as Economics 43.539★, for which additional credit is precluded.

Prerequisites: Economics 43.202★, 43.203★, and 43.220, with a GPA of 4.0 or better on these prerequisites.

Economics 43.441★**Public Sector Economics: Taxation**

A discussion of the theory of taxation and an examination of empirical attempts to quantify the theory. Some topics of current interest, such as the redistribution of income in Canada and tax reform are examined.

Precludes additional credit for Economics 43.347★.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

Economics 43.442★**Public Sector Economics: Expenditures**

A discussion of the theory of government expenditures and an examination of empirical attempts to quantify the theory. Some topics of current interest, such as expenditures and grants in the Canadian federalism are examined.

Precludes additional credit for Economics 43.348★.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

Economics 43.445★**Welfare Economics**

An examination of contemporary welfare economics and its applications.

Also offered at the graduate level, with additional or different requirements, as Economics 43.545★, for which additional credit is precluded.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, with an average grade of C- or better on these prerequisites.

Economics 43.446★**Economic Dynamics: Growth**

An examination of modern steady equilibrium economic growth encompassing neoclassical, neo-Keynesian and neo-Ricardian theories of growth and accumulation. The theories of money and capital (and controversies) are examined in a growth context. Some discussion of optimum saving and accumulation is also included.

Also offered at the graduate level, with additional or different requirements, as Economics 43.552★, for which additional credit is precluded.

Prerequisites: Economics 43.202★, 43.203★, 43.212★ and 43.213★, with an average grade of C- or better on these prerequisites.

Lectures and seminars three hours a week.

Economics 43.451★**Economic Dynamics: Business Cycles**

An analysis of the nature and causes of fluctuations in income, prices and employment. A review of theories of short-run economic dynamics, with particular references to how expectations are formed. Some consideration is given to countercyclical government policies.

Also offered at the graduate level, with additional or different requirements, as Economics 43.551★, for which additional credit is precluded.

Prerequisites: Economics 43.212★ and 43.213★, with an average grade of C- or better on these prerequisites.

Economics 43.457★**The Economics of Development**

An examination of some theoretical approaches to the economics of development, together with analysis of some economic policy issues of a largely internal character, such as intersectoral investment allocation, income distribution, unemployment, and investment in human development.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.212★ and 43.213★, or 43.211★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

Economics 43.458★**International Aspects of Economic Development**

An analysis of the international economic policy problems of development in Asia, Africa and Latin America, focusing on international trade, direct foreign investment, technological transfer, regional integration, debt and development financing, and international migration.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.212★ and 43.213★, or 43.211★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

Economics 43.461★**International Trade Theory and Policy**

International trade theory and its implications for economic policy. Topics such as determinants of trade and specialization, gains from trade and commercial policy, international factor mobility, growth and development.

Precludes additional credit for Economics 43.360★ and 43.361★.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

Economics 43.462★

International Monetary Theory and Policy

International monetary theory and its implications for economic policy. Topics such as sources of disequilibrium and adjustment in the balance of payments under fixed versus flexible exchange rates, international capital movements, and international monetary reform.

Precludes additional credit for Economics 43.360★ and 43.362★.

Prerequisites: Economics 43.212★ and 43.213★, or 43.211★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

Economics 43.465

Industrial Relations

This course provides economic analysis of selected industrial relations and labour market policy problems. Theoretical and empirical studies of labour policy issues are assessed. Topic areas include the determinants of unionization, models of strike activity, the economics of occupational health and safety, pension policy, and the impact of new technology on the labour market.

Prerequisites: Economics 43.202★ (or Economics 43.201★) with a grade of C- or better or permission of the Department.

Lectures three hours a week.

Economics 43.467★

Monetary Theory I

This course is designed to provide the analytical tools used in discussions of monetary theory and policy. The foundations of monetary theory are emphasized as are the effects of monetary change on economic activity coming through classical, Keynesian and other modern money transmission mechanisms. The policy implications of the "optimum quantity of money," various estimates of the money supply and demand, difficulties of implementing policy in open and closed economies and in a growth context are also examined.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.212★ and 43.213★, or 43.211★, with an average grade of C- or better on these prerequisites.

Lectures three hours a week.

Economics 43.468★

Monetary Theory II

A continuation of Economics 43.467★. This course analyzes in depth some past and current controversies in monetary theory particularly as they relate to policy issues.

Prerequisite: Economics 43.467★.

Economics 43.471★

National Accounting

An introduction to modern social accounting, including the national income and expenditure accounts, input-output accounts, financial flow and national balance sheet accounts. Emphasis is on Canadian practice with attention to new developments such as

national wealth accounts, price and quantity index number theory and productivity measurement, inflation and its effects on the national accounts.

Prerequisites: Economics 43.202★, 43.203★, and 43.212★, with an average grade of C- or better on these prerequisites.

Economics 43.476★

Econometrics I

An introduction to econometric theory and analysis of the classical normal regression model. Topics include estimation methods, hypothesis testing, multicollinearity, autocorrelation, and heteroscedasticity. Precludes additional credit for Economics 43.485 (no longer offered), 43.482★ (no longer offered), Mathematics 69.353★ and 70.355★.

Prerequisite: Economics 43.220 or equivalent, with a grade of C+ or better.

Economics 43.477★

Econometrics II

An extension of Economics 43.476★, Econometrics I. Topics include dummy variables, qualitative and limited dependent variables, and simultaneous equation models. Optional topics include simple expectations models, errors in variables, specification tests and diagnostic checks, distributed lag models, and seemingly unrelated regression models.

Precludes additional credit for Economics 43.485 (no longer offered).

Prerequisite: Economics 43.476★, or Mathematics 69.353★ or 70.355★, with a grade of C- or better.

Economics 43.480

Research Seminar in Urban Economics

An enquiry into the internal dynamics of cities and inter-urban relationships primarily through directed research.

Prerequisites: Economics 43.202★ and 43.203★, or 43.201★; and 43.220 or Mathematics 69.266★ and 69.267★, with an average grade of C- or better on these prerequisites.

Economics 43.483★

Applied Time Series Analysis in Economics and Business

An introduction to basic concepts of time series analysis with emphasis on model building and forecasts in economics and business. Topics include: models for stationary and nonstationary time series, model identification, estimation, computation of forecasts and transfer function models.

Also offered at the graduate level, with additional or different requirements, as Economics 43.573★, for which additional credit is precluded.

Prerequisites: Economics 43.220 with a grade of C+ or better, or Mathematics 69.266★ and 69.267★ (or equivalent), with an average grade of C+ or better.

Economics 43.484★

Advanced Topics in Applied Econometrics

Advanced coverage of one or more areas of current interest in applied econometrics. An empirical research project may be required.

Prerequisites: Economics 43.476★ and 43.477★ with an average grade of C- or better on these prerequisites.

Economics 43.486★

Comparative Economic Systems I

This course builds a framework for the study and comparison of economic systems. Using basic economic tools, it discusses the properties and comparative advantages of different contemporary economies, as well as the forces that cause or prevent change. Some Marxian theory is included, along with analyses of the role of property rights, of incentives and motivation, and of the interaction between economic and political systems.

Also offered at the graduate level, with additional or different requirements, as Economics 43.586★, for which additional credit is precluded.

Prerequisite: Economics 43.201★ or 43.202★ with a grade of C- or better, or permission of the Department.

Economics 43.487★

Comparative Economic Systems II

A comparison of contemporary economic systems. Such diverse economies as Japan, West Germany, Sweden, the U.S.S.R., China, Cuba, Yugoslavia and Hungary may be explored.

Also offered at the graduate level, with additional or different requirements, as Economics 43.587★, for which additional credit is precluded.

Prerequisite: Economics 43.201★ or 43.202★ with a grade of C- or better, or permission of the Department.

Economics 43.490

Honours Seminar

This seminar focuses on the use of basic economic analysis in a small number of research topics to be selected by the instructors. A major research paper is required. This seminar is intended for Fourth-year Honours Economics students.

Prerequisites: Economics 43.420★ and 43.421★ or permission of the Department.

Economics 43.493★

Tutorial in Economics

An additional tutorial in Economics may be taken subsequent to, or concurrently with Economics 43.490.

Prerequisite: Permission of the Department.

Economics 43.494★

Tutorial in Economics

An additional tutorial in Economics may be taken subsequent to or concurrently with Economics 43.490.

Prerequisite: Permission of the Department.

Economics 43.498

Honours Essay

Students taking Honours in Economics may write an Honours essay during their final year. This essay counts for one credit. Students work under an individual faculty adviser.

Prerequisite: Permission of the Department.

(Engineering)

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P.D. van der Puije
Q.J. Zhang

Assistant Professors
C. Plett
D.J. Walkey

Instructor
T.G. Ray

Adjunct Research Professors
V. Makios, *University of Patras*
M. Schroter, *NorTel*
P.C. Strickland, *CAL Corporation*
M.G. Stubbs, *CRC*
V. Szwarc, *CRC*
R.E. Thomas

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Engineering 97.257 ★
Electronics I

A course that treats the introductory aspects of electronics. The following topics are covered: Qualitative semiconductor physics, leading to the diode equa-

tion. Diode applications. Operational amplifiers and their application in feedback configurations including active filters. Junction field effect transistors: theory, biasing circuits, linear amplifier design. Metal-oxide-semiconductor field-effect transistors: theory and applications in linear circuits and digital gates. Digital circuits and applications in elementary combinational and sequential networks. Bipolar junction transistors. Prerequisites: Engineering 91.251 ★; Mathematics 69.201 (may be taken concurrently). Lectures three hours a week, laboratory and problem analysis three hours a week.

Engineering 97.261 ★

Electrical Energy Conversion

Fundamentals of energy; electrical and magnetic energy, electromagnetic induction and forces. Synchronous machines: single and three-phase AC generation and transmission. Power transformers: ideal and practical. DC motors: equations, equivalent circuits, operating characteristics, starting and speed control. AC induction motors: torque-speed characteristics, equivalent circuit, single phase motors. Applications of power semiconductor devices: rectification and control.

Precludes additional credit for Engineering 94.261 ★ (no longer offered).

Prerequisite: Engineering 91.251 ★.

Lectures three hours a week, laboratory and problem analysis three hours a week.

Engineering 97.267 ★/367 ★

Switching Circuits

Boolean algebra, gates, combinatorial circuits. Binary arithmetic, two's complement notation, multiplication and division. Arithmetic logic units, programmable logic arrays, read-only memories. Introduction to synchronous sequential circuits, finite-state machines, state minimization. MSI registers, counters, finite-state machines realization using MSI. Introduction to asynchronous sequential networks, flow tables, state assignment, realization.

Precludes additional credit for Engineering 94.267 ★/367 ★.

Prerequisite: Engineering 91.251 ★ or permission of the Department.

Offered as 97.367 ★ for Electrical Engineering students.

Lectures three hours a week, laboratory three hours alternate weeks.

Offered as 97.267 ★ for Computer Systems and Aerospace (Stream C) Engineering students.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 97.350 ★

Digital Electronics

A second course in digital design with an emphasis on interfacing and on ASIC and programmable logic implementations. Topics include: IEEE-Std. 91, the electronic properties of CMOS and bipolar logic gates, electrical interfacing as between logic families, asynchronous to synchronous interfacing, clock distribution and timing, and VLSI design options. Students implement substantial circuits in SSI/MSI and with field-programmable gate arrays.

Prerequisites: Engineering 97.359 ★ and 97.267 ★/97.367 ★

Lectures two hours a week, laboratory three hours a week.

Engineering 97.354★

Electromagnetic Theory

Electrostatic fields: Coulomb's law, Gauss' law, Poisson and Laplace equations, methods for solution. Dielectrics and electric fields in matter. Magnetostatic fields: Ampere's law, Biot-Savart law, magnetic vector potential, magnetic circuits. Magnetic fields in matter and ferromagnetics. Time varying fields: Faraday's law, transformers. Displacement current. Maxwell's equations; uniform plane wave solution in free space, reflection, solution for a conducting medium, skin depth. Poynting vector and energy flow. Prerequisite: Mathematics 69.201.

Lectures three hours a week, problem analysis three hours alternate weeks.

Engineering 97.359★

Electronics II

This course builds upon the material of Engineering 97.257★ and acts as a bridge between discrete and integrated circuits. The laboratory is design-oriented and includes both set laboratory exercises and project activities. Topics: Introduction to physical nature of semiconductor devices and integrated circuits. DC, small signal AC and switching properties of bipolar junction transistors. Linear amplifiers (small signal); high frequency response and bandwidth considerations; two-port analysis. Large signal amplifiers; class A, B and C operation; power amplifiers; transformerless circuits. Feedback amplifiers and operational amplifiers; considerations of gain, sensitivity, distortion and stability. Frequency selective circuit design. Oscillators.

Prerequisites: Engineering 94.260★ and 97.257★ (or concurrent registration in 94.360★).

Lectures three hours a week, laboratory three hours a week.

Engineering 97.368★

Solid State Electronics

Fundamentals of solid-state physics as applied to semiconductors: energy bands; electrons and holes; doping; carrier drift and diffusion, recombination and generation. Theory of the pn junction: current flow in forward and reverse bias; small-signal capacitance; switching transients; voltage limitations. MOS capacitors: flatband and threshold voltages; use in process control. MOSFETs: first-order model; bulk-charge model; body effect; short channel effects. Basic principles of MOS IC fabrication. Bipolar junction transistors: Ebers-Moll model; operating regimes. Laboratory experiments illustrate principles of semiconductor device physics.

Prerequisite: Engineering 97.257★.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 97.395★

Professional Practice Seminar

This course is intended to familiarize future professional engineers with current engineering practice and its relationship to other disciplines and to society in general. A sequence of seminars is presented by faculty and external lecturers covering topics such as the Professional Engineers Act, professional ethics, responsibilities of professional engineers and engi-

neering practice appropriate to the discipline. Also included are seminars on the impact of technology on society. The development of communication skills, both oral and written, is emphasized. Grades for this course are *Sat* (satisfactory), or *Uns* (unsatisfactory). (Also listed as Engineering 94.395★.)

Precludes additional credit for Engineering 82.495★ and 86.495★.

Prerequisite: Third-year registration.

Seminars three hours a week.

Engineering 97.452★

Microwave Circuits

Introduction to the principles of operation and the properties of important microwave tubes, semiconductor devices, and passive components. Scattering matrix description of microwave junctions. Properties of basic reciprocal and non-reciprocal passive microwave devices (hybrids, tuners, impedance transformers, cavities, filters, attenuators, isolators and circulators). Fundamentals of microwave amplifiers and oscillators. Design of solid-state microwave amplifiers and oscillators in coaxial, waveguide, and microstrip transmission media. Students will design, fabricate and test two microwave integrated circuits: a bandpass filter and a transistor amplifier.

Prerequisite: Engineering 97.453★.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 97.453★

Radio Frequency Lines and Antennas

Introduction to distributed circuits; transmission lines as distributed circuit elements, travelling waves and standing waves, reflection coefficient, standing wave ratio, impedance transformation, Smith charts, stub matching, quarter-wave transformers, half-wave filters, transients. Introduction to transmission lines; coaxial transmission lines, rectangular waveguide, waveguide resonators, optical fibers. Introduction to antennas; infinitesimal linear element, half-wave dipole, field equations, near and far fields, radiation resistance, gain, directivity, effective area. Introduction to linear arrays; array polynomial, broadside array, end-fire array. Laboratory on microwave measurements and techniques.

Prerequisite: Engineering 97.354★.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 97.455★

Telecommunication Circuits

A course of study of the commonly used circuit components in modern telecommunication systems. Both analog and digital systems are included. The design of the hardware is emphasized. Examples are drawn from broadcasting, telephony and satellite systems. Prerequisites: Engineering 94.351★ and 97.359★.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 97.456★

CAD for Communication Circuits

Basic principles of Computer-Aided Design tools used for analysis and design of communication circuits and systems. Frequency and time-domain analysis. Noise and distortion analysis. Transmission line effects. Sensitivity analysis, and circuit performance optimization. Digital simulation. Application ex-

amples: line cards and equalizers; MOS and bipolar macromodels; VLSI and microwave circuits.

Prerequisite: Fourth-year registration.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 97.459★ **Communication Links**

Transmission fundamentals; decibel, thermal noise, intermodulation noise, dB compression, third order intercept, dynamic range, SNR, NPR, noise figure, noise temperature, AM to PM conversion, antenna gain, EIRP, G/T, C/T. Line-of-sight microwave links; free space propagation loss, earth's bulge, Fresnel clearance, FM transmitter, horn feeds, parabolic antennas, FM receiver, diversity techniques, fade margin, repeaters. Satellite links; earth space window, path loss, up and down link calculations, multiple accessing, earth station sub-systems. Fiber optic links; fiber types, connectors, sources, detectors, system design. Tropospheric scatter links; fading, path loss, take-off angle, equipment. Millimeter wave links; propagation, rainfall loss, systems, short hop. High-frequency radio links; ionosphere, skywaves, systems, rhombic and log periodic antennas, diversity techniques.

Prerequisite: Engineering 94.351★.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 97.460★ **Radar and Navigation**

Radar: operation, range equation, minimum detectable signal, pulse integration, radar cross section, pulse repetition frequency, range ambiguities, propagation effects. Surveillance Radars: Moving Target indicator (MTI) and Pulse Doppler operation, delay line cancellers, range gated Doppler filters, MTI improvement factor, subclutter visibility, tracking with surveillance radars. Radio Navigation: pulsed and CW operation, range-range and hyperbolic lines of position, accuracy lobes. Operational systems: Loran C, Omega, VOR/DME, TACAN, Global Positioning System. Inertial Navigation: initial alignment, platform axis and navigation co-ordinate system, gyro drift, accelerometers, rotational averaging, ring laser gyros.

Prerequisites: Engineering 94.351★ and 97.453★

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 97.461★ **Microprocessor Systems**

This course deals with the various interfacing aspects in microprocessor systems. It starts with an overview of existing microprocessors and bus structures, followed by a detailed study of the internal architecture, the instruction set, and the pin functions of a specific microprocessor. Then, it addresses memory interfacing and input-output subsystems. Interrupt structures, direct memory access, input/output processors, and multiprocessor systems are discussed.

Precludes additional credit for Engineering 94.361★/94.461★ (no longer offered) and Computer Science 95.306★.

Prerequisites: Engineering 94.203★/94.303★ and 97.267★/97.367★ or permission of the Department.

Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 97.469★

Integrated Circuit Design and Fabrication

Introduction to nMOS IC design: simple static logic gates, noise margin, transmission gates, factors influencing switching speed, dynamic logic, input protection output buffers, circuit simulation with SPICE. IC layout using Mead-Conway design rules. Survey of MOS process technology: oxidation, diffusion, ion implantation, thin-film deposition, photolithography and etching. Laboratory work includes design and layout of a simple nMOS IC which is fabricated and returned for testing.

Prerequisites: Engineering 97.350★ and 97.368★

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 97.470★

Modelling and Simulation of Integrated Devices

Review and background of semiconductor physics. Bipolar modelling: the Ebers-Moll and Gummel-Poon models. MOSFET modelling: the square law and sheet charge models. Applications of device modelling to simulation programs (e.g. SPICE). One-dimensional numerical simulation of the device equations. Labs will involve investigation of device modelling through simulation, use of commercial packages and lab measurement.

Prerequisite: Engineering 97.368.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 97.475★

Electronic Materials, Devices and Transmission Media

The course is concerned with basic physical mechanisms and properties of the solid materials used in electronics. Review of solid-state theory, conductors, semiconductors, superconductors, insulators, and optical and magnetic properties. The course will stress the importance of quantum mechanical effects in determining the material properties. A primary focus will be the illustration of physical effects by analyzing devices used in modern high speed electronic and communication systems. Examples given will include transistors, lasers, photodiodes, fiber optics, Josephson junctions. The course will provide a basis for understanding the implications of the material properties on both the fabrication and operation of devices and circuits.

Precludes additional credit for Engineering 94.475★ (no longer offered).

Prerequisite: Fourth-year registration.

Lectures three hours a week.

Engineering 97.476★

Digital Integrated Electronics

Through lectures and hands-on experience in the laboratory, this course introduces advanced concepts in digital interfacing and hardware simulation. For selected circuits internal circuit operation is discussed. Industry standard VME bus operation, hardware description language VHDL programming and simulation, use of programmable logic devices as well as internal structure and operation of standard and special memory devices are covered. A modern hardware/computer simulation laboratory supports

VME multiprocessing, VHDL modelling and hardware design experiments.

Prerequisites: Engineering 97.350★ and 94.361★/94.461★.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 97.477★

Analog Integrated Electronics

A course that develops on the linear integrated circuit aspects covered in Engineering 97.359★, with particular emphasis on integration of analog signal processing techniques in monolithic IC technology. Continuous active filter design and application. MOS IC technology. OP amp design. Basic sampled data concepts; Z-transform analysis, switched capacitor filters. Noise aspects. Bipolar technology: radio frequency IC design.

Prerequisite: Engineering 97.359★.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 97.478★

Advanced Digital Integrated Circuit Design

An advanced course in VLSI design based on BiCMOS technology; switching characteristics of BiCMOS logic circuits; performance estimation and optimization; structured design and test, Computer-Aided Design tools, design for testability. Laboratory exercises place a strong emphasis on design methods, functional modelling and simulation.

Prerequisite: Fourth-year registration.

Lectures, three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 97.496★

Special Topics in Electrical and Computer Systems Engineering

At the discretion of the Engineering Faculty Board, a course dealing with selected advanced topics of interest to Electrical and Computer Systems engineer-

ing students may be offered. (Also listed as 94.496★).

Prerequisite: Fourth-year registration.

Lectures three hours a week, laboratory and problem analysis three hours alternate weeks.

Engineering 97.497 or 97.498

Engineering Project

As part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self-reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc. Each student is required to submit his or her engineering project proposal to the Chair of the Department of Electronics on or before the last day of classes in September.

Note:

Students in the Electrical Engineering degree program whose engineering project is under the supervision of a faculty member within the Department of Electronics should register in Engineering 97.497; those whose project is under the supervision of a faculty member in the Department of Systems and Computer Engineering should register in Engineering 94.497.

Students in the Computer Systems Engineering degree program whose engineering project is under the supervision of a faculty member within the Department of Electronics should register in Engineering 97.498; those whose project is under the supervision of a faculty member in the Department of Systems and Computer Engineering should register in Engineering 94.498.

(Arts)

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L.T.R. McDonald
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T.G. Middlebro'
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K. O'Donnell
E.D. Padolsky
R.B. Rutland
J.A. Steele
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P. Walton

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B. Leckie
T.G. Nollet

Adjunct Professors
V.K. Chari
M. Gnarowski
R.D. Mathews
K.J. McGillivray
J. Noonan
G.J. Wood

Adjunct Research Professors
J.H.C. Reid
D.J. Wurtele

Graduation Requirements

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Pass Program

The Pass program in English consists of a minimum of 6.0 credits in English, as follows:

1. 1.0 credit at the 100-level;
2. English 18.230;
3. 1.0 credit in Canadian literature;
4. 1.0 credit at the 300-level in British literature in the period prior to 1900;
5. 1.0 additional credit at the 300-level;
6. 1.0 additional credit.

Note:
English 18.200★, 18.201★, 18.268, 18.291 and 18.293 may not be counted towards the Pass degree requirements but they may be counted as options towards the degree.

Combined Pass Program

The Combined Pass program in English and another discipline consists of at least 5.0 credits in English, including:

1. 1.0 credit at the 100-level;
2. English 18.230;
3. 1.0 credit in Canadian literature;
4. 1.0 credit at the 300-level;
5. 1.0 additional credit.

Note:
English 18.200★, 18.201★, 18.268, 18.291 and 18.293 may not be counted towards Combined Pass degree requirements but they may be counted as options towards the degree.

Academic Standing

In order to continue in the Pass program, a student must attain a GPA of 4.0 or better in the First-year course in English. A GPA of 4.0 or better must be maintained thereafter in English courses.

Honours Program

All students who meet the general University Honours requirements and who have a GPA of 6.0 or better in English, will be admitted to the Honours program. It should be noted that a GPA of 6.5 in English is required for continuation after 14.0 credits and for graduation in Honours. Other applicants will be given individual consideration on application to the Department. The Honours program consists of 20.0 credits of which a minimum of 11.0 must be in English, including the following:

1. 1.0 credit at the 100-level;
2. English 18.230;
3. 1.0 credit in Canadian literature;
4. 1.0 credit at the 300- or 400-level in each of the following:
 - (a) Medieval literature;
 - (b) Renaissance literature;
 - (c) Restoration, Eighteenth-century, or Romantic literature;
 - (d) Victorian British literature;
 - (e) Twentieth-century literature;
 - (f) Literary criticism;
5. 2.0 additional credits.

Of the 11.0 credits, at least 2.0 must be credits at the 400-level.

A single course may satisfy only one requirement in 3 and 4.

Note:

Fourth-year standing is interpreted as the completion of 14.0 credits in the Honours program.

Combined Honours Programs

Combined Honours programs may be arranged. 6.0 credits in English are required, including:

1. 1.0 credit at the 100-level;
2. English 18.230;
3. 1.0 credit in Canadian literature;
4. 1.0 credit at the 300- or 400-level in British literature in the period prior to 1900;
5. 1.0 additional credit at the 300- or 400-level;
6. 1.0 additional credit.

Of the 6.0 credits, at least 1.0 must be a credit at the 400-level. English 18.200★, 18.201★, 18.268, 18.291 and 18.293 may not be counted towards the English requirements for Combined Honours but they may be counted as options towards the degree.

Combined Honours, English and Journalism

A Combined Honours program in English and Journalism may be arranged for students who are admitted to the School of Journalism and Communication.

Candidates for the degree of Bachelor of Journalism, Combined Honours Journalism and English, take a total of 20.0 credits (20.5 credits if admitted prior to 1995-96). The 6.0 required English credits are the same as for any other Combined Honours program in English.

Candidates for the degree of Bachelor of Arts, Combined Honours English and Journalism, take a total of 20.0 credits (20.5 credits if admitted prior to 1995-96). The 6.0 English credits required for the Combined Honours program must include English 18.498.

Certificate in English Language and Composition

This is an in-service certificate intended primarily for practising teachers and designed to upgrade their knowledge of those areas of language and of writing theory which underlie the new Ontario guidelines and support documents.

Admission requirement: a university degree or teaching certificate.

To receive the Certificate in English Language and Composition, students must meet the following requirements:

1. English 18.295;
2. English 18.247;
3. English 18.495;
4. 2.0 credits chosen from the following: English 18.206, 18.305, Linguistics 29.264★, 29.271★, 29.425, or a course approved by the Department.

Note:

The same course cannot be counted towards both a degree and the certificate. If any of the courses required for the certificate have already been taken for a degree, then the student must choose an approved option to replace them. Not all the above-listed courses may be offered in any one year.

Graduate Program

The Department of English Language and Literature offers courses of study leading to the degree of Master of Arts. Students may choose a program consisting of course work and thesis or one consisting of course work and a research essay. For further details consult the *Graduate Studies and Research Calendar* and the Department's *Handbook of Advice for Graduate Students in English*.

Film Course and Writing Seminars in Poetry and Prose Fiction

The film course (English 18.268) and the writing seminars in poetry and prose fiction (English 18.291 and 18.293) offered in the Department of English Language and Literature carry credit towards the total requirements for the Pass and Honours degree and may be counted among the minimum eleven-credit requirements of the Honours program. They cannot, however, be counted among the minimum six-credit requirements of the Pass program or the Combined Honours program.

Restricted-Enrolment Workshops

Students who wish to enrol in the following courses: English 18.200★ (Theatre Workshop I), English 18.201★ (Theatre Workshop II), English 18.291 (Poetry Workshop) or English 18.293 (Fiction Workshop), should note the following:

1. Enrolment in these workshop courses is restricted.
2. By August 23, 1996 students interested in either English 18.291 or 18.293 must submit a portfolio of work. Further information about these courses may be obtained from the Department.
3. A list of students admitted into these courses will be posted in the Department on August 30, 1996.
4. During the Fall registration period, all applicants should register in an alternative course or courses to assure themselves that they are in the number of courses they wish to take, in the event they are not admitted to a workshop.

Reading Lists

Detailed reading lists will be available from the Department of English Language and Literature (1812 Dunton Tower) after May 31. If you are out of town and want a copy of a reading list please send a stamped self addressed envelope to: Book List, English Department, Carleton University, 1125 Colonel By Drive, Ottawa, Ontario K1S 5B6.

Courses of Interest to Students in Other Disciplines

The Department offers a number of courses of special interest to students outside the English programs, such as English 18.101 (English and Continental Texts); English 18.105 (Writing and Language); English 18.203 (Introduction to the Novel in English); English 18.206 (Children's Literature); English 18.208 (Myth and Symbol); English 18.212★ (Comedy and Satire); English 18.217★ (Literature and the Sciences); English 18.290★ (Literature of the Self); English 18.292 (Women and Literature); English 18.296 (The Writer, Literature and Society).

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

English 18.100

English Literature from Chaucer to T.S. Eliot

A study of significant works of English literature, presented as a general historical survey from the fourteenth to the twentieth centuries. The authors to be studied include Chaucer, Marlowe, Shakespeare, Donne, Milton, Pope, Swift, Fielding, Keats, Wordsworth, Browning, Dickens, Tennyson, Yeats, Eliot.

Lectures three hours a week.

English 18.101

English and Continental Texts

A study of works by English and continental writers. The list of authors to be read usually includes Dante, Boccaccio, Chaucer, Shakespeare, Byron, Flaubert, Tolstoy, Ibsen and O'Casey. Consult the instructor or the Department for complete reading lists. The continental texts are read in translation.

Lectures three hours a week.

English 18.105

Writing and Language

This course seeks to improve the writing of students from all disciplines through a study of the principles of logic, grammar and rhetoric, and through the application of those principles in frequent writing assignments. Various forms of prose (e.g. scientific, expository, narrative, literary) are studied.

Workshop three hours a week.

English 18.162

Twentieth-Century Literature

An introduction to literary study, examining the poetry, drama, and fiction of the twentieth century, against the background of the social, cultural, and artistic issues that have determined the concerns of its writers. Instructors choose representative American, British and Canadian texts for close critical reading and careful textual analysis. Students will increase their familiarity with literary terminology and with the skills needed for the expression and development of their ideas in clear, concise English. This course is recommended for English Pass and Honours students.

Lectures three hours a week.

English 18.200★

Theatre Workshop I

A course dealing with the rudiments of theatrical performance: voice, movement, improvisation, interpretation. Exercises are based upon examples drawn from the classic and contemporary repertoires.

Note: Enrolment is restricted. See Restricted-Enrolment Workshops, this page.

Prerequisite: A 100-level credit in English or Second-year standing.

English 18.201★**Theatre Workshop II**

A course dealing with techniques of characterization, principles of ensemble performance, scene analysis for actors and directors, styles of performance. Exercises are based upon examples from the classic and contemporary repertoires.

Note: Enrolment is restricted. See Restricted-Enrolment Workshops, p. 256.

Prerequisite: English 18.200★ or permission of the Department.

English 18.203**Introduction to the Novel in English**

An historical and critical study of the novel from its beginnings in the eighteenth century to the present. Twelve to fifteen novels are studied.

Precludes additional credit for English 18.303 (no longer offered).

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.206**Children's Literature**

A historical and critical study of children's literature. The course introduces students to critical analysis and assessment of a number of acknowledged classics of children's literature. The organization of works studied is generic, with myth, legend, folklore, fantasy, poetry, drama, allegory, fable and fiction being the principal forms to be considered. A detailed reading list is available from the Department.

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.208**Myth and Symbol**

A study of myth and its appearance in literature. The course explores the great myths that gave form to man's search for meaning, and that still strike a deep response in the psyche. A wide range of texts is used to demonstrate the nature and vitality of myth in both its non-literary and literary forms.

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.209**Greek and Latin Literary Genres**

A study through English translations of the various genres of Greek and Latin literature, especially those which influenced later European writing: epic, drama, the ode, pastoral poetry, satire. Offered in the Department of Classics as Classical Civilization 13.209.

English 18.212★**Comedy and Satire**

A critical examination of the comic and satiric in English literature through a study of representative plays, novels and short stories. The theory of comedy and satire is examined in relation to the texts: types, techniques and themes.

Precludes additional credit for English 18.202 (no longer offered).

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.215★**History of the Language**

A course on the nature and development of the sounds, grammar and spelling of the English language, together with some study of its cultural and stylistic evolution.

Precludes additional credit for English 18.205 (no longer offered).

Prerequisite: A 100-level credit in English or Second-year standing.

Lectures three hours a week.

English 18.217★**Literature and the Sciences**

A course concentrating on certain points of intersection between literature and science, using texts from various periods and genres.

Precludes additional credit for English 18.207 (no longer offered).

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.230**British Literature from the Renaissance to the Romantics**

A selection of works by major authors, generally including Spenser, Shakespeare, Donne, Milton, Pope, Swift, Coleridge and Wordsworth, is studied intensively. Students are introduced to basic critical vocabulary and to methods of critical analysis. This course should be taken by Pass and Honours students in the Second year.

Prerequisite: A 100-level credit in English.

Lectures/seminar three hours a week.

English 18.268**Forms and Conventions of the Cinema**

This course examines the forms, structures and stylistic conventions of the cinema. Attention is given to the development of a critical idiom suited to the description, analysis and evaluation of film. (Also listed as Film Studies 19.268.)

Prerequisite: Film Studies 19.100 or a 100-level credit in English.

Three hours lecture and screening, one hour lecture.

English 18.272**Introduction to American Literature**

An introduction to the major authors and traditions of American literature from its beginnings to the present.

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.282**Canadian Literature**

A survey of the development of Canadian literature in English from its nineteenth-century beginnings to the present.

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.288**Contemporary English-Canadian and French-Canadian Literature**

This course, which is offered by faculty members from the English and French Departments, provides

a general introduction to and comparison of the two major literatures of Canada. Lectures are given in both English and French. Students are encouraged to use the French language for self-expression but need not do so. (Also listed as Canadian Studies 12.288 and French 20.288.)

Precludes additional credit for English 18.188 (no longer offered).

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.290★

Literature of the Self

A study of the forms, themes and meaning of autobiographical literature. Attention is paid to the history of autobiographical writing and to the autobiography as a social document, but the main focus of the course is on autobiography as part of the modern search for the self.

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.291

Poetry Workshop

A workshop involving regular assignments in writing poetry and practical criticism based on this work.

Note: Enrolment is restricted. See Restricted-Enrolment Workshops, p. 256.

Prerequisites: A 100-level credit in English and permission of the Department.

Workshop two hours a week.

English 18.292

Women and Literature

An exploration of the feminine perspective in literature as well as the changing role of women in society. A theoretical survey of relevant issues provides a general framework for the course; the main focus, however, is on selected literary texts. Both women authors and the feminine role in works of literature and in the society that produced them are studied.

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.293

Fiction Workshop

A workshop involving regular assignments in writing prose fiction and practical criticism based on this work.

Note: Enrolment is restricted. See Restricted-Enrolment Workshops, p. 256.

Prerequisites: A 100-level credit in English and permission of the Department.

Workshop three hours a week.

English 18.294

Drama to the Nineteenth Century

A study of selected significant plays from the classical to the modern period of world drama, including classical, medieval, renaissance, restoration and modern drama.

Precludes additional credit for English 18.304 (no longer offered).

Prerequisite: A 100-level credit in English or Second-year standing.

Lectures three hours a week.

English 18.295

Introduction to the English Language

A course intended particularly as an in-service course for teachers of English and the language arts. The sound system of English in relation to English spelling; English vocabulary, grammar and syntax; stages in the acquisition of English as a first language, especially after age six; roles and uses of English in Canada; standard English pedagogical implications. Prerequisite: Admission to the Certificate in English Language and Composition program or permission of the Department.

Note: This course is chiefly intended for practising or future teachers.

Lectures three hours a week.

English 18.296

The Writer, Literature and Society

An examination of the roles adopted by the writer in relation to society, either as apologist, social critic, satirist, moralist, visionary or myth-maker. Texts are chosen from a wide variety of historical periods, but the main focus is on the writer in the modern world.

Prerequisite: A 100-level credit in English, or Second-year standing.

Lectures three hours a week.

English 18.297

Writing: Theory and Practice

A study of the process of writing in theory and practice. Readings and discussions focus on the nature of the composing process; the development of writing abilities from the elementary years to maturity; the interrelationships between thinking and writing; strategies for encouraging growth in writing. (Also listed as Linguistics 29.247.)

Prerequisite: Second-year standing or enrolment in either of the Certificate Program in English Language and Composition or CTESL program.

English 18.300

Literary Criticism from Aristotle to the Present

Problems and questions in literary criticism.

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.302

Contemporary Literary Theory

A study of contemporary approaches to critical analysis: phenomenology, hermeneutics, reception theory, structuralism, semiotics, feminist criticism, dialectical criticism, post-structuralism and deconstruction.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

English 18.305

Style, Imagination and Judgment

An examination of the nature of good and bad writing. The category of imagination as a criterion for judging prose. Conditions favourable to the production of good writing. The cultural effects of bad writing.

Prerequisite: Third-year standing or enrolment in the Certificate program in English Language and Composition.

Lectures three hours a week.

English 18.312

Old English

A study of Old English language and literature, including grammar and phonology, and translation of selections of Old English prose and poetry.

Prerequisite: A 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.322

Chaucer and the Literature of Medieval England

A study of Chaucer's works and of the English language and literature between the Norman conquest and the fifteenth century.

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.332

Renaissance Literature

A study of the great age of English literature. Poetry and prose from Wyatt and More to Donne and Milton are considered, representing such literary movements as Christian humanism, classicism and meta-physical literature.

Precludes additional credit for English 18.337 and 18.338 (no longer offered).

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.334

Shakespeare

A close study of a selection of Shakespeare's plays; attention is also paid to his environment and his development as a dramatist.

Precludes additional credit for English 18.236 (no longer offered).

Prerequisite: A 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.342

Eighteenth-Century Literature

A detailed study of authors and movements of the period 1660 to 1780.

Precludes additional credit for English 18.242 (no longer offered).

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.343

The Novel from Defoe to Scott

A study of selected novelists of the eighteenth century and early nineteenth century.

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.348

Romanticism

A study of major writers, including Wordsworth, Coleridge, Byron, Keats and Shelley.

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.351

Victorian Poetry

A detailed examination of the poetry of Tennyson, Browning and Arnold, with some attention to related poems of other Victorian authors.

Prerequisite: English 18.230 or permission of the Department.

Lectures three hours a week.

English 18.353

The Novel from Dickens to Conrad

A study of the English novel from the High Victorian period of Dickens, Thackeray and Eliot to World War I.

Precludes additional credit for English 18.253 (no longer offered).

Prerequisite: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.361

Twentieth-Century Poetry

An introduction to the poetry of Great Britain, the United States and Canada in the twentieth century.

Prerequisite: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.362

Literature of Modern Ireland

The English language poetry, drama, and fiction of modern Ireland. The course includes such authors as Yeats, Synge, O'Casey, Shaw, Joyce, Behan, Beckett, Heaney.

Prerequisite: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.363

Twentieth-Century British Fiction

A study of twentieth-century British fiction. The specific authors may vary from year to year. Consult the Department's reading lists.

Prerequisite: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.364

Modern Drama

An examination of the significant trends that have shaped the development of modern drama from Ibsen and Strindberg to such contemporary dramatists as Beckett, Albee and Pinter. Among the movements discussed and illustrated from relevant plays are realism, symbolism, expressionism, epic theatre, surrealism, theatre of cruelty and theatre of the absurd.

Prerequisite: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.371

American Poetry

A study of twentieth-century American poetry to the 1970s. Attention is given to poetic movements and influences.

Prerequisite: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.373

American Fiction

A study of the American novel to the present. Attention is given to theories of fiction, movements and influences.

Prerequisite: Third-year standing and a 100-level credit in English or permission of the Department.

Lectures three hours a week.

English 18.381

Canadian Poetry

A study of the development of poetry in Canada through selected poets. Authors studied will include: Layton, Souster, Dudek, Birney, Purdy, Atwood, Jones, Kroetsch, MacEwen, Ondaatje, Webb, Bowring, Marlatt, Nichol, Wah.

Prerequisite: English 18.282 or permission of the Department.

Seminar two hours a week.

English 18.383

Canadian Fiction

A study of selected Canadian novels and the development of Canadian fiction.

Prerequisite: English 18.282 or permission of the Department.

Seminar three hours a week.

English 18.390

The Literature of Existentialism

A study of the origins, development and principal characteristics of existentialist literature. (Also listed as Arts and Social Sciences 04.390.)

Prerequisite: Third-year university standing.

Lectures three hours a week.

English 18.392

Scottish Literature

A study of the poetry and prose of Scotland from the fourteenth to the twentieth century. The course may include such authors as Dunbar, Smollett, Burns, Scott, Gibbon and McDiarmid.

Prerequisite: Third-year standing.

Lectures three hours a week.

English 18.394★

Theatre and Society

A study of the theatre in its social context: two periods of theatre history are studied to illustrate the relations among elements such as theatrical forms and conventions, theatre buildings, theatre occasions and theatre theories, as they occur within specific social circumstances.

Prerequisite: A 100-level credit in English or permission of the Department.

Lectures three hours a week.

Topics or courses at the 400-level change from year to year. Consult the English Department's *Undergraduate Studies in English Course Guide* for topics offered in 1996-97. The Guide is available from the Department of English after April 1st.

English 18.400

Studies in Literary Theory and Criticism

A study of a selected topic in literary theory and criticism.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.401★

Studies in Poetry

A study of a selected topic in Victorian British poetry. Prerequisite: Fourth-year standing in Honours English or permission of the Department.

English 18.403

Studies in the Novel

A seminar for the study and discussion of the art of the novel as exemplified by major works of fiction. Study includes varieties of form and pattern, modes of narration, imagery and symbolism, realism, and naturalism.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.404★

Theatre Theory and the Practice of Theatre Criticism

A seminar in which students study classic texts of theatre theory and apply them to the writing of critiques of selected local theatre productions.

Prerequisite: A course in drama or theatre or permission of the Department.

English 18.428★

Studies in Medieval Literature I

A study of a selected topic in Medieval literature.

Prerequisite: English 18.322 and Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.429★

Studies in Medieval Literature II

A study of a selected topic in Medieval literature.

Prerequisite: English 18.322 and Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.431★

Studies in Renaissance Literature I

A study of a selected topic in Renaissance literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.432★

Studies in Renaissance Literature II

A study of a selected topic in Renaissance literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.434★

Elizabethan and Jacobean Drama

A study of dramatic literature and production in the period 1580-1640.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.436★

Shakespeare

A seminar for Honours students, concentrating on critical and scholarly approaches to Shakespeare's work.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.441★

Studies in Restoration and Eighteenth-Century Literature I

A study of a selected topic in Restoration or Eighteenth-Century literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.442★

Studies in Restoration and Eighteenth-Century Literature II

A study of a selected topic in Restoration and Eighteenth-Century literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.447★

Studies in Romantic Literature I

A study of a selected topic in Romantic literature.

Precludes additional credit for English 18.448A★ (if taken in 1990-94).

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.448★

Studies in Romantic Literature II

A study of a selected topic in Romantic Literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.451★

Selected Topic in Victorian Literature I

A study of a selected topic in Victorian Literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.452★

Selected Topic in Victorian Literature II

A study of a selected topic in Victorian Literature

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.458

Studies in Victorian Literature

A study of a selected topic in Victorian literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.461★

Selected Topic in Twentieth-Century British Poetry

A study of a selected topic in twentieth-century British poetry.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.467★

Studies in Twentieth-Century British Literature I

A study of a selected topic in British literature of the twentieth century.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.468★

Studies in Twentieth-Century British Literature II

A study of a selected topic in British literature of the twentieth century.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.471★

Selected Topic in American Poetry

A study of a selected topic in American poetry.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.478★

Studies in American Literature I

A study of a selected topic in American literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Lectures two hours a week.

English 18.479★

Studies in American Literature II

A study of a selected topic in American literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.481★

Selected Topic in Canadian Poetry

A study of a selected topic in Canadian poetry.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.482

Studies in Canadian Ethnic Minority Literature

A study of selected works by Canadian ethnic minority writers.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.483

Studies in the Literature of Quebec and English Canada

A study of selected works of the literatures of Quebec and English Canada.

Prerequisites: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.486★

Studies in Canadian Literature I

A study of a selected topic in Canadian literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.487★

Studies in Canadian Literature II

A study of a selected topic in Canadian literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.488

Canadian Writing and the Literatures of the First Nations

This course investigates the dominant discourse about Native People in Canadian writing and the literatures produced by storytellers and writers of the First Nations, from the period of first contact until the present. Texts include a wide range of material from Canadian, Indian, Inuit and Métis writers.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.490★

Studies in Culture and the Text

A course in applied literary theory: a study of narrative fictions in the context of culture.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.495

Research Seminar in English and Education

Investigation of recent developments in language study, rhetoric and composition, and studies of the literary imagination and their implications for the

teaching of English. This course is chiefly intended for practising or future teachers. It may meet on an irregular schedule. Classes may begin before the first week in September.

Prerequisite: English 18.295 and 18.297 or permission of the Department.

Seminar two hours a week.

English 18.496★

Studies in African or Caribbean Literature

A study of a selected topic in African or Caribbean literature.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.497★

Studies in Australian and New Zealand Literature or Indian Literature in English

A study of a selected topic in Australian and New Zealand literature or Indian literature in English.

Prerequisite: Fourth-year standing in Honours English or permission of the Department.

Seminar two hours a week.

English 18.498

Independent Study

A course for independent research and writing, under the supervision of a member of the Department, open to students in the Fourth year of Honours with a B+ standing in their English courses. An essay of approximately 10,000 words is the usual written assignment. A written request, outlining the project, with the approval of the supervisor, must be submitted to the co-ordinator by the last day for course changes.

Note: This course may be used to fulfil one of the seminar or 400-level requirements for the Honours degree, but it cannot normally fulfil an area requirement or substitute for English 18.230. For students in Combined Honours, however, it is considered to be the equivalent of an Honours Essay.

(Science)

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Academic Administration

*Members of the Committee
Chair, to be announced
I. Munro, Program Adviser*

*Research Adviser
F.A. Michel*

*B.R. Lifeso, Registrar, Faculty of Science
M.W. Smith
D. Wigfield*

General Information

There is increasing concern throughout most of the world regarding the state of the environment, and interest in understanding the effect of human activity on the environment is widespread. Such a topic cannot be adequately addressed in any of the traditional discipline-based degree programs. Carleton University therefore offers a multidisciplinary program leading to an Honours degree in Environmental Science. This Bachelor of Science degree program has as a requirement a credit in Philosophy, and a relevant Social Sciences/Arts sequence is recommended. This requirement recognizes that the state of the environment is not simply a matter of science, but also includes consideration of economics, law, politics, philosophy, etc. The primary aim of the program is, nevertheless, to provide a solid grounding in those areas of science that are required to reach an understanding of the environment and how the actions of humanity affect it.

The first two years of the program are structured to ensure that students receive a thorough grounding in those areas of science that are required to address environmental issues. The final two years of study leading to the Honours degree allow for a substantial degree of choice. The program must, however, be designed with a particular specialization in mind, and the choice of most of the course pattern must be done in consultation with the Program Adviser. The Honours Research Project (Environmental Science 62.496) is meant to give the student an opportunity to do some original research in the specialization developed through the course-pattern chosen in the Third and Fourth years.

A suitable sequence of 2.0 credits in Social Sciences/Arts is required. Students are advised to consult the Program Adviser about this at an early stage in the program.

Admission Requirements

The requirements are those specified for the B.Sc. Honours degrees for the Faculty of Science. (See p. 107.)

Graduation

In order to graduate, students must fulfil all University regulations (see p. 52) and all Faculty regulations (see p. 112), in addition to the regulations established by the Environmental Science Committee.

Honours Program**Summary of Program Requirements**

1. 2.5 credits in Environmental Science: Environmental Science 62.150★, 62.359★, 62.396★, 62.496;
2. 1.0 credit in Mathematics: Mathematics 69.107★, 69.257★;
3. 3.0 credits in Geology and Geography: Geology 67.105/Geography 45.105, Geology 67.238★ and 67.281★ and 1.0 credit in approved science courses at the 300- or 400-level in Geography;
4. 2.0 credits in Chemistry: Chemistry 65.100, 65.231★, 65.280★;
5. 2.0 credits in Biology: Biology 61.103★ and 61.104★, 61.214★ (or 61.220★), 61.360★;
6. 0.5 credit in Philosophy: Philosophy 32.184★;
7. 2.0 credits appropriate to Environmental Science in a coherent Social Sciences/Arts sequence (see *Comments Regarding Course Requirements*, 1, p. 264) (of which up to 1.0 credit may be chosen from the list of courses otherwise not acceptable as Social Science electives for Science students). (See p. 110.)
8. 3.5 credits in approved Science courses (see comments regarding course requirements 2);
9. 1.0 additional credit in approved Science courses at the 400-level (see comments regarding course requirements 2);
10. 1.5 credits chosen in consultation with the Program Adviser;
11. 1.0 credit, free elective.

Note:

The following will be used to calculate the Major GPA: all 62.xxx courses, 67.238★, 65.280★, 61.360★, 32.184★, and all of Program Requirement 8, 9 and 10.

Suggested Course Pattern**First Year**

Mathematics 69.107★ and 69.257★
Geology 67.105/Geography 45.105
Chemistry 65.100
Biology 61.103★ and 61.104★
Philosophy 32.184★
Environmental Science 62.150★

Second Year

Chemistry 65.280★ and 65.231★

1.0 credit in Geography at the 300- or 400-level and that are approved Science courses
 Geology 67.281★ (to be taken in the Fall term before lectures commence) and 67.238★

Biology 61.214★ or 61.220★ (students intending to take microbiology, or higher-level courses in physiology should choose Biology 61.220★)

Free elective, 0.5 credit

Social Sciences/Arts elective, 1.0 credit (or Physics 75.101★ and 75.102★ or 75.105, see *Note* below)

Third Year

Environmental Science 62.359★

Environmental Science 62.396★

Social Sciences/Arts elective (1.0 credit)

Biology 61.360★

Science credits (2.5 credits), which must be approved by the Program Adviser prior to registration (suggested courses are listed below)

Fourth Year

Environmental Science 62.496

Science credits (2.0 credits) including at least 1.0 credit at the 400-level, which must be approved by the Program Adviser prior to registration

2.0 additional credits: 0.5 free elective and 1.5 credits approved by the Program Adviser prior to registration.

Note:

If Physics 75.101★ and 75.102★ or 75.105 was taken in Second year, 1.0 Social Sciences/Arts elective must be taken in place of either 1.0 Science credit in the Third year or 1.0 of the additional credits required in the Fourth year.

Some Suggested Courses for the Science Requirements of the Environmental Science Program

Biology 61.201★, 61.202★, 61.214★, 61.220★, 61.305★, 61.325★, 61.331★, 61.335★, 61.351★, 61.361★, 61.362★, 61.363★, 61.364★, 61.365★, 61.370, 61.381★, 61.391★, 61.413★, 61.414★, 61.415, 61.416★, 61.419★, 61.430★, 61.440, 61.447, 61.460, 61.461, 61.469★, 61.471★, 61.481★;

Chemistry 65.370★, 65.380★, 65.431★, 65.432★, 65.480★;

Computer Science 95.102★, 95.103★, 95.105★, 95.106★;

Geography 45.302★, 45.311★, 45.312★, 45.313★, 45.315★, 45.318★, 45.319★, 45.336★, 45.400★, 45.403★, 45.404★, 45.412★, 45.413★, 45.414★, 45.418★, 45.445★;

Geology 67.232★, 67.419★, 67.424★, 67.425★;

Mathematics and Statistics 69.117★, 69.259★, 69.357★;

Physics 75.101★ and 75.102★, or 75.105, 75.291★, 75.292★, 75.424★;

Technology, Science, Environment Studies 59.401★, 59.402★

Comments Regarding Course Requirements

1. The recommended Social Sciences/Arts sequence should be chosen in consultation with the Program Adviser. Upper-year courses of interest to students in Environmental Science usually require a First-year prerequisite; therefore this sequence may have to be started in Second year. Suitable sequences can be set up in Economics, Political Science/Law, Human Geography, Sociology, Anthropology, Mass Communication, etc.

2. 1.5 credits in the Fourth year can be chosen from any department, but they must be suitable for the program of the individual student. The choice must also be made so that the regulations of the Faculty of Science for the B.Sc. degree (Major or Honours) (see p. 108) are met. It is recommended that these courses be chosen in consultation with the Program Adviser to ensure a proper foundation for the student's specialization and thesis research

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Environmental Science 62.150★

Environmental Science Seminar

This course introduces the elements of the natural and human-modified environment and discusses society's interest in environmental quality. The approach is by case studies in which the nature and extent of the requirement for scientific understanding of the elements of the natural environment and the processes by which human activities have an impact upon the environment are discussed.

Limited to students registered in the Environmental Science program.

Lectures two hours a week, workshop two hours a week.

Environmental Science 62.359★

Group Project

The course consists primarily of a group project relating to an issue involving environmental science conducted under the supervision of a faculty member. Seminars discussing effective methods of team research, and oral and written presentation of results are included. The project involves the collection of data from the literature and/or from experiments, the analysis of such data as they pertain to the aim of the project, and the preparation of one written and several oral reports. The course includes seminars on topics such as preparation of audiovisual presentations and effective report writing. Project groups and topics are assigned before the end of the Fall term. Prerequisites: Registration in the Third year of the Environmental Science program and permission of the Program Chair.

Seminars and workshops.

Environmental Science 62.396★

Environmental Science Research Planning

This course is designed to assist students to prepare a research plan for their Honours thesis. The course will focus on discussion and workshop experience in the fundamentals of scientific investigation applied to environmental science. Topics may include: critical use of literature and other knowledge sources, use of theory, use of empirical data, hypothesis construction, hypothesis testing, measuring variables, model-

ling and data analysis, effective interaction with advisors, assembly of effective advisory committees, elements of a research plan, time budgeting. Individual discussion will assist each student to prepare and communicate a research plan for an honours thesis which is acceptable to a Thesis Advisory Committee composed of a Supervisor and two Advisers.

Prerequisites: Registration in the Third year of the Environmental Science Program and successful completion of Environmental Science 62.359★.

Workshop/discussion three hours a week.

Environmental Science 62.496

Honours Research Project

Students registered in the Fourth year of the Environmental Science program must carry out a research project under the supervision of a member of faculty. Normally, the choice of courses in Third year should have been made with a research topic for this project in mind. Approval of the topic and of the research schedule must be obtained from the project supervisor and the Research Adviser before the last day for late registration. Each student's performance is examined by a faculty committee after completion of the project, when a written report is to be submitted. An oral examination is also required. The written report must be submitted by the last day for submission of course assignments. Extensions of this deadline will be allowed only at the discretion of the Research Adviser.

Prerequisite: Registration in the Fourth year of the Environmental Science program.

(Arts)

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Sessional Lecturers
Patricia Goodspeed
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General Information

Film Studies is an academic discipline concerned with the history, criticism, theory and practice of the cinema both as an art form and as a documentary record of our time. The cinema is a source of pleasure and knowledge, and its study should form a part of one's cultural education. The program will enable the student to develop a critical faculty appropriate to intelligent understanding of the cinema by approaching its study as a scholarly activity that rewards systematic research, analysis and exposition.

In designing the curriculum, the Discipline has sought both integration and progressive development. A careful curricular development will ensure intellectual growth through either a Pass or Honours program devoted to the study of film. While the courses have been articulated together, they remain distinct enough to permit a number of related intellectual approaches to the study of film, and to enable those approaches to be related to work in other disciplines.

Graduation Regulations

In order to graduate, students must fulfill all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all discipline regulations and requirements as set out below.

Pass Programs

Pass Program

All students who elect a Pass program in Film Studies must have their program approved by a member of the Discipline of Film Studies. The Pass program in Film Studies consists of a minimum of 6.0 credits in Film Studies, as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. Film Studies 19.301★ and 19.351★, and 1.0 additional credit in Film Studies at the 300-level;
4. 2.0 additional credits in Film Studies beyond the 100-level.

Combined Pass Programs

Combined Pass programs may be arranged with other departments and disciplines in the Faculties of Arts or Social Sciences. Both departments or disciplines must approve a Combined Pass program.

A Combined Pass program in Film Studies and another subject includes at least 5.0 credits in Film Studies, as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. 2.0 credits in Film Studies at the 300-level;
4. 1.0 additional credit in Film Studies beyond the 100-level.

Honours Programs

Honours Program

All students who meet the general University Honours requirements, and who have a GPA of 6.0 or better in Film Studies, will be admitted to, and permitted to continue in, the Honours program. Other applicants will be given individual consideration on application to the Discipline. Honours students must have their program approved by a discipline adviser.

Honours in Film Studies consists of a minimum of 9.0 credits in Film Studies as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. Film Studies 19.301★ and 19.351★, and 1.0 additional credit in Film Studies at the 300-level;
4. 2.0 credits in Film Studies at the 400-level;
5. 3.0 additional credits in Film Studies beyond the 100-level.

Combined Honours Programs

Combined Honours programs may be arranged through the Assistant Director. Both departments or disciplines must approve a Combined Honours program. A Combined Honours program in Film Studies and another subject includes at least 7.0 credits in Film Studies, as follows:

1. Film Studies 19.100;
2. Film Studies 19.200;
3. Film Studies 19.301★ and 19.351★, and 1.0 additional credit in Film Studies at the 300-level;
4. 1.0 credit in Film Studies at the 400-level;
5. 2.0 additional credits in Film Studies beyond the First year, 1.0 of which must be at the 300-level or above.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Film Studies 19.100 Introduction to Film Studies

An introduction to the study of film. Consideration is given to the nature of the medium, audience perception, historical and technical development of the cinema, and problems of theory and critical method. The course focuses on four specific areas: (a) style and technique; (b) a period in film history; (c) the film maker; and (d) film genres.

Lecture and screening three hours a week, discussion one hour a week.

Film Studies 19.200 Film Theory, Historiography and Criticism

This course examines basic questions of film theory, historiography and criticism. Emphasis is given to developing critical skills through a close analysis of films, theoretical and historiographical writings.

Prerequisites: Film Studies 19.100 and Second-year standing; or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.216★ The Documentary

This course examines the work of individual film makers, of documentary styles and of organizations and institutions in the context of the history of documentary film making, including documentaries made for television. Non-fiction films other than documentaries may be considered. (Also listed as Journalism 28.216★.)

Precludes additional credit for Film Studies 19.215 (Journalism 28.215) (no longer offered).

Prerequisite: Film Studies 19.100 or permission of the Discipline.

Lecture and screening two hours, two days a week.

Film Studies 19.221★ National Cinema

This course examines the film production of specific countries in order to determine the themes, the styles, and the character of a national cinema.

Prerequisite: Film Studies 19.100.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.229 The Canadian Cinema

A critical examination of Canadian cinema. The course relates the Canadian cinema to other aspects of Canadian culture, including television, and examines the conditions that have affected filmmaking in this country.

Precludes additional credit for Film Studies 19.328 (no longer offered).

Prerequisite: Film Studies 19.100 or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.241★ The Film Maker

A detailed study of the themes, the characteristic style, development and influence of one or more directors.

Prerequisite: Film Studies 19.100.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.261★ Film Genres

This course examines questions of generic form, drawing examples from the world cinema.

Prerequisite: Film Studies 19.100.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.268 Forms and Conventions of the Cinema

This course examines the forms, structures and stylistic conventions of the cinema. Attention is given to the development of a critical idiom suited to the description, analysis, and evaluation of film. (Also listed as English 18.268.)

Prerequisite: Film Studies 19.100 or a First-year course in English.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.301★ Aspects of Film History

A study of major histories of film. Special attention is paid to historiographical assumptions, the critical judgements and the cultural values that have affected past and present evaluations of the cinema.

Precludes additional credit for Film Studies 19.300 (no longer offered).

Prerequisites: Film Studies 19.200 and Third-year standing; or permission of the Discipline.

Film Studies 19.315★ Questions of Documentary Practice

This course examines the theoretical implications of documentary film and documentary television practice. (Also listed as Journalism 28.315★)

Prerequisite: 1.0 credit in Film Studies at the 200-level, or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.325

Studies in American Cinema

Cultural, social and organizational studies of the American cinema. The course focuses on various features of this cinema such as the major production companies, the star system, genres, film style, and the role of the individual film maker. The course may also examine the relationship between American cinema and American television.

Precludes additional credit for Film Studies 19.228 (no longer offered).

Prerequisite: 1.0 credit or its equivalent in Film Studies at the 200-level, or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.329★

Topics in Canadian Cinema

Studies in various aspects of Canadian cinema. Topics may vary from year to year.

Precludes additional credit for Film Studies 19.328 (no longer offered).

Prerequisite: Film Studies 19.229 or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.331★

Topics in Cinema and Gender

A study of selected topics in gender and cinema with emphasis on critical and historical questions.

Prerequisite: 1.0 credit in Film Studies at the 200-level, or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.333

Film and Society

An examination of film in relation to social and intellectual developments of the twentieth century. The ways in which the cinema has both shaped and been shaped by some of these developments are considered. (Also listed as Journalism 28.333.)

Prerequisite: 1.0 credit in Film Studies at the 200-level, or permission of the Discipline.

Film Studies 19.351★

Film Theory

A detailed study of major film theories and their relationship to critical practice.

Precludes additional credit for Film Studies 19.350 and 19.368 (both no longer offered).

Prerequisites: Film Studies 19.200 and Third-year standing; or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

Film Studies 19.371★

Topics in Animation, Video, and Experimental Film

A study of selected topics in animation, video or experimental film.

Prerequisite: 1.0 credit in Film Studies at the 200-level or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.400

Modes of Historical Research

This course develops the critical and archival skills necessary for individual research in the field of film history, and includes practical research related to the course material.

Prerequisite: Film Studies 19.301★ or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

Film Studies 19.421★

Selected Topics in National Cinemas

A study of a selected topic in national cinema.

Prerequisite: Fourth-year Honours standing in Film Studies or permission of the Discipline.

Lecture and screening three hours a week, lecture one hour a week.

Film Studies 19.429★

Selected Topics in Canadian Cinema

A study of selected topics in Canadian cinema.

Prerequisite: Fourth-year Honours standing in Film Studies or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

Film Studies 19.441★

Selected Topics in Film Authorship

A study of questions of authorship in the cinema, concentrating on one or more film makers.

Prerequisite: Fourth-year Honours standing in Film Studies or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

Film Studies 19.451★

Selected Topics in Film Theory

A study of a selected topic in film theory.

Prerequisite: Film Studies 19.351★ or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

Film Studies 19.461★

Studies in Film Analysis

An analysis of individual films in relation to questions of critical practice.

Prerequisite: Fourth-year Honours standing in Film Studies or permission of the Discipline.

Lecture and screening three hours a week, seminar two hours a week.

Film Studies 19.480★

Seminar in Film/Video Archival or Curatorial Practice

This seminar offers selected topics in film/video archival or curatorial practice, which may include questions related to cultural policy, and the exhibition, conservation, and interrelationship of media. Students enrolled in the course are expected to bear all travel and other costs arising from required visits to local facilities.

Prerequisite: Fourth-year standing in Film Studies, or permission of the Discipline.

Seminar three hours a week.

Film Studies 19.485★, 19.486★, 19.487★

Practicum in Film and Film Studies

A film studies option enabling students to gain practical experience in the discipline by working on specific projects under the supervision of the staff of one of the museums, archives, production companies or related settings in the Ottawa area. Readings, discussions and reports are integrated with the program in the different settings. Available visitations and positions within them on particular projects may change from year to year. A maximum of 1.0 credit of practicum may be offered in fulfillment of Film Studies requirements.

Prerequisite: Fourth-year standing in Film Studies, or permission of the Discipline.

Film Studies 19.491★

Special Topic

This course offers selected topics in film studies not ordinarily available in the regular course program. The choice of topic or topics will vary at least every two years and will be announced well in advance of the registration period.

Prerequisite: Fourth-year standing in Film Studies or permission of the Discipline.

Screening three hours a week, seminar two hours a week.

Film Studies 19.495

Independent Study

A research course for selected students who wish to study a topic of particular interest. The course may be taken only once. Projects must be organized on an individual basis with a member of the Film Studies Program and be approved by the Program committee. A written request outlining the project must be submitted by the first day of Fall term. An essay of 6,000 to 8,000 words is the usual assignment. However, presentation in other media may be possible. Prerequisites: Permission of the Discipline and Fourth-year Honours standing in Film Studies.

Graduate Study

While Film Studies does not offer a graduate program, a graduate-level course, Canadian Cinema (Film Studies 19.529), is taught by a member of the Discipline through the School of Canadian Studies. Further information is available in the *Calendar of the Faculty of Graduate Studies and Research*.

(Arts)

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Academic Administration

Chair

To be announced

Assistant Chair

To be announced

Supervisor of Graduate Studies

To be announced

Supervisor of Honours Studies

E. Zimmerman

Supervisor of Pass Studies

J. Kealey

Teaching Staff

Professors

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R. Galliani
M. Gaulin
A. Halsall
P. Laurette
P. Smart
D.W. Smith

Associate Professors

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A. Ruprecht
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V. Basseville
B. Burke
C. Cordier-Gauthier
C. Dion
L. Dupuis
N. Sama
C. Thérien
B. Vincent-Smith

Adjunct Professors

H.P. Clive
O. Condemine
J.S. Tassie
P. van Rutten

Sessional Lecturers

M. Conway
A. Hinton
M. Peters
M.-A. Rousseau-Beecher

General Information

Carleton University is situated in a bilingual community, and students are encouraged to take advantage of the multiple opportunities for practical appreciation of the language. Radio, television, cinema, stage, the press and everyday conversation are at hand to supplement academic programs. Classes are conducted in French unless otherwise indicated. The Department also has at its disposal a fully equipped language laboratory.

English-speaking students who wish to graduate with Pass or Honours standing in French are normally required to pass an oral examination testing their proficiency in spoken French. The examination takes place at the beginning of their final year, with the option of repeating it at the end of that year.

Students are reminded that they may take more French credits than the required minimum in order to improve their proficiency in French.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Student Exchanges

The Department of French has two student exchanges, one with the *Université du Québec* in Trois-Rivières, and the other with the *Université de Savoie* in Chambéry, France. These exchanges make it possible for a maximum of four Honours students, normally English-speaking, two of whom go to Québec and two to France, to spend their Third year in an immersion milieu. Financial assistance is also available. For more information please consult the Department.

Pass Programs

1. Pass in French

The following program will help students to consolidate their knowledge of French and to gain a comprehensive view of various aspects of French and French-Canadian literature.

This program consists of 6.0 credits.

In the First year, students normally take either French 20.150, 20.151 or 20.152. Students also take one of the following: French 20.161, 20.162 or 20.163.

In the Second year, students normally take French 20.211 (for Anglophones) or 20.212 (for Francophones) or French 20.232★ and French 20.233★ and, in addition, 1.0 credits in literature chosen from the series French 20.261★ to 20.268★. One of French 20.280★, 20.281★ may be taken as partial fulfilment of the Second-year literature requirements.

In the Third year, students normally take 1.0 credit from French 20.312 or 20.332 or 20.336★ and 20.337★ and, in addition, 1.0 literature credit chosen from the series French 20.361 to 20.381 or, exceptionally and only with permission, French 20.461 to 20.471★.

Students should note that at least one of the literature credits must be obtained in a course or courses with a French content, and at least 1.0 credit in a course or courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

2. Combined Pass

Combined Pass programs are available in French and other modern or classical languages, linguistics, or with another discipline in the humanities or social sciences.

This program consists of 5.0 credits.

In the First year, students normally take either French 20.150, 20.151 or 20.152. Students also take one of the following: French 20.161, 20.162 or 20.163.

In the Second year students normally take French 20.211 (for Anglophones) or 20.212 (for Francophones) and 1.0 credits in literature chosen from the series French 20.261★ to 20.268★. One of French 20.280★, 20.281★ may be taken as partial fulfilment of the Second-year literature requirements.

In the Third year students normally take either 1.0 credit from French 20.312 or 20.332 or 20.336★ and 20.337★ or a literature credit chosen from the series French 20.361 to 20.381 or, exceptionally and only with permission, French 20.461 to 20.471★.

Students should note that at least one of the credits in literature must be in a course or courses with a French content, and at least one in a course or courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

Honours Programs

Several Honours programs are available. Course patterns are designed to assure a balanced appreciation of French and French-Canadian literature, and competence in and knowledge of the French language. Interested candidates will note the general regulations governing Honours. (See p. 75.)

Note:

Honours students intending to choose the language-linguistics concentration would be well advised to take the required course Linguistics 29.100 during their First year.

Honours in French

Students in the Honours program must declare their concentration in the Second year. There are two areas of concentration in the French Honours program:

Concentration A:

This program consists of 7.0 credits in literature and 3.0 credits in French language and linguistics.

2.0 credits are also taken in ONE language other than French or English. Students who already have the knowledge of a third language and can furnish appropriate proof may be exempted, in whole or in part, from this requirement.

In the First year, students normally take either French 20.150, 20.151 or 20.152. Students also take one of the following: French 20.161, 20.162 or 20.163.

2.0 further credits in French language and linguistics are chosen from French 20.211 (for Anglophones) 20.212 (for Francophones), French 20.232★ and 20.233★, 20.312, 20.332, 20.336★ and 20.337★, 20.432★ to 20.437★. At least 1.0 of these credits must be at the 300/400-level.

6.0 further credits in literature are normally chosen as follows:

Second Year: 2.0 credits from the series French 20.261★ to 20.268★; one of French 20.280★, 20.281★ may be taken as partial fulfilment of the second year literature requirements.

Third Year: 2.0 credits from the series French 20.361 to 20.381;

Fourth Year: 2.0 credits from French 20.434★ and the series 20.461 to 20.471★.

Students should note that two of the literature credits must be obtained in courses with a French content, and two in courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

Concentration B:

This program consists of 7.0 credits in French language and linguistics and three credits in literature. Students are also required to take Linguistics 29.100 and must obtain 1.0 credit in a language other than French or English. Students who already have the knowledge of a third language and can furnish appropriate proof may be exempted from the language credit requirement.

In the First year, students normally take either French 20.150, 20.151 or 20.152. Students also take one of the following: French 20.161, 20.162 or 20.163.

2.0 further credits in literature are selected as follows: 1.0 credits chosen from the series French 20.261★ to 20.268★; 1.0 credit chosen from the series French 20.361 to 20.381 or 20.461 to 20.471★.

One of French 20.280★, 20.281★ may be taken as partial fulfilment of the Second-year literature requirements.

6.0 further credits in French language and linguistics are normally taken as follows:

Second year: French 20.211 (for Anglophones) or 20.212 (for Francophones) and French 20.232★, 20.233★ or 20.231.

Third year: French 20.312 and a credit from the series French 20.332 to 20.337★ or 20.331 and a credit from the series French 20.312 to 20.337★.

Fourth Year: 2.0 credits chosen from French 20.431 to 20.437★.

Students should note that one of the literature credits must be obtained in a course or courses with a French content, and one in a course or courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

Combined Honours

Combined Honours programs are available in French and English, German, History, Italian, Latin, Linguistics, Political Science, Russian or Spanish, and with other departments by arrangement.

The Honours programs combining two languages prepare the student either for graduate work or for the Ontario College of Education courses leading to the Interim High School Assistant's Certificate Type A, and must be planned in close consultation with the departments concerned. The combined programs with History or Political Science are suited for various kinds of public careers.

Two areas of concentration have been created in the Combined Honours program:

Concentration C:

This program consists of 5.0 credits in literature and 2.0 credits in French language and linguistics.

In the First year, students normally take either French 20.150, 20.151 or 20.152. Students also take one of the following: French 20.161, 20.162 or 20.163.

1.0 further credit in French language and linguistics is chosen from French 20.211 (for Anglophones), 20.212 (for Francophones).

4.0 further credits in literature are normally chosen as follows:

Second Year: 1.0 credits from the series French 20.261★ to 20.268★; one of French 20.280★, 20.281★ may be taken as partial fulfillment of the Second-year literature requirements.

Third Year: 1.0 credit from the series French 20.361 to 20.381;

Fourth Year: 2.0 credits from French 20.434★ and the series French 20.461 to 20.471★.

Students should note that at least 1.5 of the literature credits must be obtained in courses with a French content, and at least 1.5 credits in courses with a French-Canadian content. The literature credit taken in First year can be counted in this context.

Concentration D:

This program consists of 5.0 credits in French language and linguistics and 2.0 credits in literature. One credit is also taken in Linguistics 29.100.

In the First year, students normally take either French 20.150, 20.151 or 20.152. Students also take one of the following: French 20.161, 20.162 or 20.163.

1.0 further credit in literature from the series French 20.261★ to 20.268★ or, with permission, a credit chosen from the series French 20.361 to 20.381, or from French 20.461 to 20.471★, or the course French 20.434★; one of French 20.280★, 20.281★ may be taken as partial fulfillment of the Second-year literature requirements.

4.0 further credits in French language and linguistics are normally chosen as follows:

Second Year: French 20.211 (for Anglophones) or 20.212 (for Francophones) or 20.232★ and 20.233★;

Third Year: French 20.312

Fourth Year: 2.0 credits from the series French 20.432★ to 20.437★.

Students should note that at least 0.5 credit in literature must be obtained in a course with a French content, and at least 0.5 credit in a course with a French-Canadian content. The literature credit taken in First year can be counted in this context.

Combined Honours in French and Journalism for the B.J. Degree

The course requirements are as follows:

1. One of French 20.150, 20.151 or 20.152; one of French 20.161, 20.162 or 20.163; French 20.210; 1.0 credit from the series French 20.261★ to 20.268★; French 20.310; 2.0 further French credits at the 400-level.
 2. For students admitted to Journalism from 1995-96 on, 28.100, 28.221, 28.225★, 28.251★, 28.325, 28.326, 28.400, 28.421, and two of 28.425★, 28.426★, 28.427★, 28.428★.
 3. 1.0 approved credit in Canadian history.
 4. Approved options to make up a program total of 20.0 credits (20.5 credits if admitted prior to 1995-95).
- Students should also consult the School of Journalism and Communication.

Combined Honours in French and Humanities for the B.Hum. Degree

The course requirements are as follows:

1. French 20.150, 20.151 or 20.152 (year one, requirement 2 of the College);
2. French 20.211 or 20.212 (year two, requirement 2 of the College);
3. French 20.261★ and 20.262★ (year two, requirement 3 of the College);
4. 1.0 credit chosen from 20.263★, 20.264★, 20.265★, 20.280★, 20.281★; only one of French 20.280★, 20.281★ may be taken as partial fulfillment of the requirement (year three, requirement 3 of the College);
5. 1.0 credit chosen from the series 20.361, 20.362, 20.363 or 20.364 (year three, requirement 2 of the College);

6. 2.0 credits chosen from 20.366★ and 20.367★ or from the series 20.461 to 20.469★ (year four, requirement 2 and 4 of the College).

See p. 311 for Humanities requirements.

Certificate in French Language Studies

This is a 6.0-credit undergraduate certificate designed for part-time students wishing to perfect their spoken and written French. Candidates for the certificate are also encouraged to investigate undergraduate degree programs offered by the University. Courses taken for the certificate are normally creditable towards a Bachelor of Arts degree. Such a degree program will normally require that at least 5.0 credits required for a Bachelor of Arts degree be completed after the awarding of the certificate.

Admission Requirements

(See p. 33.)

Course Requirements

The following courses or combinations of courses are required, for candidates with the normal prerequisite:

1. French 20.150, 20.151 or 20.152;
2. French 20.211 or 20.212;
3. French 20.231;
4. French 20.232★ and 20.233★;
5. French 20.312 or 20.332 or 20.336★ and 20.337★;
6. 1.0 credit from French 20.331, 20.431, 20.432★ or 20.433★.

For candidates with knowledge of French to the level of French 20.150:

1. French 20.211 or 20.212;
2. French 20.231;
3. French 20.232★ and 20.233★;
4. One of French 20.312, 20.332, or 20.336★ and 20.337★;
5. French 20.331 or 20.431;
6. French 20.432★ and 20.433★.

Students are not permitted to count the same course(s) towards both certificates offered by the Department of French. Should any student undertake a second certificate, appropriate course substitutions will be required.

Certificate in French Translation Studies

This is a 6.0-credit undergraduate certificate designed for part-time students wishing to develop and improve skills in translation. While it is not a professional program, this certificate should meet the needs of those who are occasionally called upon to translate in their work environment. Candidates for the certificate are also encouraged to investigate undergraduate degree programs offered by the University.

Courses taken for the certificate are normally creditable towards a Bachelor of Arts degree. Such a degree program will normally require that at least 5.0 credits required for a Bachelor of Arts degree be completed after the awarding of the certificate.

Admission Requirements

(See p. 33.)

Course Requirements

The following courses or combinations of courses are required, for candidates with the normal prerequisite:

1. French 20.150, 20.151 or 20.152 or, with the approval of the Department of French, a course given in French in a subject other than French;
2. French 20.231;
3. French 20.312 (or French 20.432★ and 20.433★);
4. French 20.331;
5. French 20.431;
6. French 20.483 (a tutorial in translation).

Students are not permitted to count the same course(s) towards both certificates offered by the Department of French. Should any student undertake a second certificate, appropriate course substitutions will be required.

Graduate Program

The Department offers studies leading to the M.A. degree. The Department offers a substantial number of courses in a wide variety of subjects. For further information please consult the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

French Placement for Language Students

Students who have not previously taken a language course in the Department and who wish to enrol in French 20.100, 20.120, 20.130, 20.140, 20.141, 20.150, 20.151, 20.152, must read and follow the guidelines for choosing French language courses that can be found in the *Registration Instructions and Class Schedule* booklet and follow the instructions of the Touch Tone Registration System. Before selecting a language course, students should note that there are four levels in the language courses and that the following sequence applies:

Level 1: 20.100

Level 2: 20.120

Level 3: 20.130

Level 4: 20.140, 20.141

Level 5: 20.150, 20.151, (20.152)

Level 6: 20.209 (20.210)/20.211 (20.212)

Students cannot go backwards in the sequence of levels. Students should also note that 20.106★ can be taken simultaneously or sequentially with any course at the first, the second, the third or the fourth level but cannot be taken simultaneously with 20.150 or 20.151.

The Department offers special sections of French 20.150 or 20.152 and the courses 20.210 and 20.310 for Journalism students.

Note:

Students desiring a First-year French credit to satisfy the language requirement of their department or school should consult that department or school as to the acceptability of French 20.100, 20.106★, 20.120, 20.130, 20.140, 20.141, 20.150, 20.151.

French 20.100

Introductory French

This course is designed for absolute beginners in the language. Classes use audio-visual methods, and emphasis is given to the spoken language. Limited enrolment per section. No auditors. Compulsory attendance. No supplemental or grade-raising examinations. The credit gained from this course will not count as part of the specific requirements for a Pass or Honours degree in French.

Prerequisite: French Placement.

Five hours a week.

French 20.106★

Reading French

This course, given in English, is designed to enable specialists from other departments in the humanities, social sciences and sciences to read technical texts in French with reasonable ease. The goal is comprehension of the written word only. The course involves basic French grammar, the reading of selected material from various fields, and an individual assignment in the student's specialization. The course is open to beginners. Registration by permission of the department. The half credit gained from this course will not count as part of the specific requirements for a Pass or Honours degree in French. No auditors.

Prerequisite: French Placement or permission of the Department.

One and a half hours a week throughout the year.

French 20.120

Elementary French

This course is designed for students who have already been exposed to French but are not yet able to use it in communicative situations. It emphasizes oral expression and comprehension and includes an introduction to reading. Development and reinforcement of the fundamental structures of oral French in context through effective use of language learning strategies. Discrimination of sounds, rhythm, intonation patterns and pronunciation. Compulsory attendance. Limited enrolment per section. No auditors. No supplemental or grade-raising examinations. This course will not count as part of the specific requirements for a Pass or Honours degree in French.

Precludes additional credit for French 20.102★ (no longer offered).

Prerequisite: French 20.100 or French Placement.

Three hours a week.

French 20.130

Intermediate French I

This course is designed for students who can already communicate in elementary situations and who want to improve their communicative abilities. It emphasizes oral expression and comprehension at the intermediate level and develops reading and writing skills. Acquisition and development of functions (questioning, comparing, narrating, etc.) and notions (expression of duration, possession, negation, etc.). Related syntax and vocabulary. Reinforcement of language learning strategies. Compulsory attendance. Limited enrolment per section. No auditors. No supplemental or grade-raising examinations. This course will not count as part of the specific requirements for a Pass or Honours degree in French.

Precludes additional credit for French 20.104★ (no longer offered).

Prerequisite: French 20.120 or French Placement.

Three hours a week.

French 20.140

Intermediate French II

This course is designed for students with an intermediate level of French who want to use the language as a means for self-expression. Enrichment of oral and written skills through thematic material introducing cultural aspects of the language. Development of grammatical competence in context. Reinforcement of language learning strategies. Compulsory attendance. Limited enrolment per section. No auditors. No supplemental or grade-raising examinations. This course will not count as part of the specific requirements for a Pass or Honours degree in French.

Precludes additional credit for French 20.107★ (no longer offered).

Prerequisite: French 20.130 or French Placement.

Three hours a week.

French 20.141

Intermediate French II Intensive

This course is designed for students with an intermediate level of French who want to use the language as a means for self-expression. Enrichment of oral and written skills through thematic material introducing cultural aspects of the language. Development of grammatical competence in context. Reinforcement of language learning strategies. No auditors. No supplemental or grade-raising examinations. This course will not count as part of the specific requirements for a Pass or Honours degree in French. Compulsory attendance.

Precludes additional credit for French 20.107★ (no longer offered).

Prerequisite: French 20.130 or French Placement.

Six hours a week.

French 20.150

Advanced French (A)

Intensive study of the French language based on principles of written and oral communication with particular attention to the vocabulary, syntax and various levels of speech in context. Oral reports and written assignments are part of the overall evaluation. This course is specially designed for Anglophone students. It is open to students of all departments and can be counted as part of the specific requirements for a Pass or Honours degree in French. Special sections provided for students in Journalism. Not

open to native speakers of French. Compulsory attendance.

Precludes additional credit for either French 20.108, 20.110 or 20.111 (no longer offered).

Prerequisite: OAC in French or French 20.140 or equivalent level.

Three hours a week.

French 20.151

Advanced French (A) Intensive

Intensive study of the French language based on principles of written and oral communication with particular attention to the vocabulary, syntax and various levels of speech in context. Oral reports and written assignments are part of the overall evaluation. This course is specially designed for Anglophone students. It is open to students of all departments and can be counted as part of the specific requirements for a Pass or Honours degree in French. Not open to native speakers of French. Compulsory attendance. Precludes additional credit for either French 20.108, 20.110 or 20.111 (no longer offered).

Prerequisite: OAC in French or French 20.140 or French 20.141 or equivalent level.

Six hours a week.

French 20.152

Advanced French (B)

Comprehensive study of modern grammar. Acquisition of an extensive vocabulary. This course is particularly designed for Francophone and bilingual students intending to specialize in French.

Compulsory attendance. No auditors.

Three hours a week.

French 20.161

Introduction to Literature: French Texts from the Seventeenth to the Nineteenth Century

This course introduces the student to a certain number of general views on literature with particular attention to the following: the basic elements of a literary work (characters, story, plot, subjects, themes), the problems of interpretation, the intentions of the author and the perception of the reader, the work in its various contexts: biographical, literary, sociological; the formal aspects typical of certain genres, particularly the drama and poetry. The texts illustrating these aspects in French literature are selected within the period from the Middle Ages to the end of the nineteenth century.

Prerequisite: OAC in French, or equivalent.

Three hours a week.

French 20.162

Introduction to Literature: French Texts from the End of the Nineteenth Century to the Present

This course introduces the student to a certain number of general views on literature with particular attention to the following: the basic elements of a literary work (characters, story, plot, subjects, themes), the problems of interpretation, the intentions of the author and the perception of the reader, the work in its various contexts: biographical, literary, sociological; the formal aspects typical of certain genres, particularly the drama and poetry. The texts illustrating these aspects in French literature are selected within the period from Zola (nineteenth century) to the present day. Students taking this course will not be allowed to count French 20.266★ as part

of the specific requirements for a Pass or Honours degree in French.

Prerequisite: OAC in French, or equivalent.

Three hours a week.

French 20.163

Introduction to Literature: French-Canadian Texts from the End of the Nineteenth Century to the Present

This course introduces the student to a certain number of general views on literature with particular attention to the following: the basic elements of a literary work (characters, story, plot, subjects, themes), the problems of interpretation, the intentions of the author and the perception of the reader, the work in its various contexts: biographical, literary, sociological; the formal aspects typical of certain genres, particularly the drama and poetry. The texts illustrating these aspects in French-Canadian literature are selected within the period from Nelligan (nineteenth century) to the present day. Students taking this course will not be allowed to count French 20.268★ as part of the specific requirements for a Pass or Honours degree in French.

Prerequisite: OAC in French, or equivalent.

Three hours a week.

French 20.181

Civilization

This course, given in French, entails the study of a certain number of important elements of the culture and civilization of two French-speaking countries, alternatively Canada and France: culture, customs, institutions, etc., with emphasis on the present situation. The credit gained from this course will not count as part of the specific requirement for a Pass or Honours degree in French.

Prerequisite: Permission of the Department.

Three hours a week.

French 20.206★

Advanced Reading French

This course is designed to enable specialists from other departments to gain greater proficiency in reading technical texts in French. Readings of selected material from various fields and individual assignments in the student's specialization. The half credit gained from this course will not count as part of the specific requirements for a Pass or Honours degree in French. No auditors.

Prerequisite: French 20.106★ or permission of the Department.

One and a half hours a week throughout the year.

French 20.209

Techniques d'expression orale et écrite pour Non-Majors

Ce cours s'adresse à l'étudiant anglophone non-spécialisé en français et sert à approfondir la forme française de son expression orale et écrite. Partant de documents oraux et de textes non-littéraires, il enseigne les différentes manières d'organiser l'énoncé par des exercices variés, oraux et écrits. En plus de l'enrichissement du vocabulaire et du perfectionnement grammatical, le cours éclaire les principaux mécanismes de la langue.

Prerequisite: French 20.150 or permission of the Department.

Three hours a week.

French 20.210

Techniques d'expression écrite et orale pour journalistes

Ce cours, destiné aux étudiants en journalisme, insiste sur l'étude des éléments qui constituent les codes de la presse écrite et électronique, tout en examinant la presse francophone au Canada.

Prerequisite: French 20.150 or permission of the Department.

French 20.211

Techniques d'expression écrite et orale (A)

Ce cours prépare l'étudiant anglophone à partir de bases théoriques syntaxiques et textuelles à composer dans un français soutenu, par l'emploi de mots précis, d'images et d'autres procédés. Initiation à l'argumentation et à la composition littéraire.

Etude de textes littéraires de diverses époques.

Prerequisite: French 20.150 or permission of the Department.

Three hours a week.

French 20.212

Techniques d'expression écrite et orale (B)

Ce cours destiné aux étudiants francophones comporte des objectifs similaires à ceux du cours French 20.211, mais s'inspire d'une méthode et d'ouvrages adaptés à leur niveau de compétence linguistique.

Prerequisite: French 20.152 or permission of the Department.

Three hours a week.

French 20.231

Initiation à la traduction

Comparaisons d'ordre grammatical, lexical et stylistique entre l'anglais et le français. Exercices de traduction de l'anglais au français visant l'expression et exercices de traduction du français à l'anglais visant la compréhension.

Prerequisite: French 20.150 or 20.152 or permission of the Department.

Three hours a week.

French 20.232★

Introduction à l'étude linguistique du français

Revue des éléments essentiels en recherche linguistique; application de ces éléments à la description et à l'analyse de la langue française; préparation aux différents cours de linguistique française offerts au département.

Prerequisites: French 20.150 or 20.152 and Linguistics 29.100 or permission of the Department.

Three hours a week.

French 20.233★

Phonétique et phonologie du français

Révision des notions fondamentales de la phonétique française. Organes de la parole. Phonèmes du français. Phonétique articulatoire et acoustique; phonétique combinatoire. Prosodie. Notions fondamentales de la phonologie du français. Les traits distinctifs du français.

Prerequisites: French 20.150 or 20.152 and Linguistics 29.100 or permission of the Department.

Three hours a week.

French 20.261★

La littérature du Moyen Âge

Introduction aux principaux courants de la littérature médiévale et approfondissement d'un ou plusieurs aspects de celle-ci par l'étude détaillée de certains textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Three hours a week.

French 20.262★

La littérature du XVI^e siècle

Introduction aux théories de la Pléiade et aux aspects principaux de la littérature de la Renaissance, avec approfondissement de différents aspects de cette littérature par l'étude détaillée de quelques textes.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

French 20.263★

La littérature du XVII^e siècle

Le classicisme et/ou le mouvement baroque dans la littérature française du XVII^e siècle, notamment le théâtre. Étude détaillée de plusieurs aspects de cette littérature dans un choix de textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

French 20.264★

La littérature du XVIII^e siècle

La fin du classicisme, le siècle de la raison, les Encyclopédistes et les Philosophes. Approfondissement d'un ou plusieurs aspects de cette littérature par l'étude détaillée de quelques textes.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Three hours a week.

French 20.265★

La littérature du XIX^e siècle

Introduction aux principaux courants de la littérature française du XIX^e siècle: Romantisme, Réalisme, Parnasse, Symbolisme. Étude plus détaillée d'un ou plusieurs de ces aspects dans un choix de textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Three hours a week.

French 20.266★

La littérature du XX^e siècle

Survol de la littérature française moderne du Naturalisme au nouveau roman; l'unité et la diversité de cette littérature avec des exemples choisis parmi les textes représentatifs d'un ou plusieurs aspects les plus marquants. This course will not count as part of the specific requirements for a Pass or Honours degree in French if taken in conjunction with French 20.162. Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.

Three hours a week.

French 20.267★

La littérature du XIX^e siècle au Canada français

Introduction aux principaux courants idéologiques et littéraires. Les débuts du roman et/ou de la poésie d'après quelques textes représentatifs.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.
Three hours a week.

French 20.268★

La littérature du XXe siècle au Canada français

Évolution des principaux genres littéraires vue dans une optique sociale et esthétique. Le cours portera principalement sur l'époque contemporaine. This course will not count as part of the specific requirements for a Pass or Honours degree in French if taken in conjunction with French 20.163.

Prerequisite: French 20.161 or 20.162 or 20.163 or permission of the Department.
Three hours a week.

French 20.280★

Civilisation de la France et de la francophonie

Étude d'un certain nombre d'éléments importants de la culture et de la civilisation de la France et de la francophonie: institutions, activité culturelle et intellectuelle, divers aspects de la vie actuelle.

Prerequisite: Permission of the Department.

French 20.281★

Civilisation du Canada français

Étude d'un certain nombre d'éléments importants de la culture et de la civilisation du Canada français: institutions, activité culturelle et intellectuelle, divers aspects de la vie actuelle.

Prerequisite: Permission of the Department.

French 20.282

Le théâtre: Théorie et pratique

Examen détaillé de plusieurs oeuvres théâtrales avec, pour objet, la préparation à des travaux pratiques (diction, interprétation théâtrale) et la participation à une ou plusieurs pièces présentées dans le cadre du cours.

Prerequisite: Permission of the Department.

French 20.288

Contemporary English-Canadian and French-Canadian Literature

This course, which is offered by the French and the English departments, is designed for students who do not intend to select French as a Pass or Honours subject. It provides a general introduction to the two major literatures of Canada, and is taught in the two languages. (Also listed as Canadian Studies 12.288 and English 18.288.)

Precludes additional credit for French 20.188.

Prerequisites: A basic reading knowledge of French and Second-year standing.

French 20.310

L'écriture journalistique

Ce cours, destiné aux étudiants en journalisme, insiste sur l'analyse des mécanismes de l'écriture journalistique. L'étude des textes de nature différente (articles d'information, analyses, éditoriaux, reportages de fond, etc.) sera complétée par la rédaction d'articles sur l'actualité politique et autre.

Prerequisite: French 20.210 or permission of the Department.

French 20.312

Cours de grammaire descriptive

Étude de la langue française par une réflexion sur les structures de la langue et l'utilisation des grandes grammaires descriptives du français. Méthodologie de la recherche grammaticale, établissement de bibliographies et de corpus. Exercices pratiques. Cours commun aux étudiants anglophones et franco-phones.

Prerequisite: French 20.211 or 20.212 or permission of the Department.

Three hours a week.

French 20.331

Principes et méthodes de la traduction

Initiation aux principes sous-jacents à la traduction, en particulier de l'anglais au français. Exercices pratiques s'appliquant à des textes non littéraires, souvent spécialisés (scientifiques, administratifs, commerciaux, etc.).

Prerequisite: French 20.231 or permission of the Department.

Three hours a week.

French 20.332

Français canadien

Histoire de la langue française au Canada; description de la phonétique, morphologie, syntaxe; le lexique: archaïsmes, anglicismes, canadianismes; variations sociales et régionales; problème de la norme.

Prerequisite: French 20.211 or 20.212 or permission of the Department.

Three hours a week.

French 20.336★

Aspects de la linguistique de français I

Le contenu précis de ce cours varie selon les années. Sujet pour 1996-97: la variation historique. Étude des principaux changements intervenus dans la langue française de l'ancien français au français moderne: histoire de la conjugaison des verbes, des pronoms personnels, de l'ordre des mots. Histoire de la prononciation. Évolution du sens des mots et histoire du vocabulaire. Similarités entre la variation historique et la variation dialectale.

Prerequisite: French 20.233★ or permission of the Department.

Three hours a week.

French 20.337★

Aspects de la linguistique de français II

Le contenu précis de ce cours varie selon les années. Sujet pour 1996-97: Phonomorphologie comparée du français et de l'anglais. Chute de voyelles, expressions des temps, articles possessifs, pronoms personnels, mots outils. Phénomènes prosodiques basés sur la connaissance des dialectes de chaque participant. Enregistrement. Fréquences et contractions.

Prerequisite: French 20.211 or 20.212 or permission of the Department.

Three hours a week.

French 20.361

La Poésie

Le contenu précis de ce cours varie selon les années. Sujet pour 1996-97: *la chanson de geste; la communication épique et sa fonction sociale; l'épopée; la*

question des origines, l'oralité et l'écriture. La vision épique et la société (le monde chevaleresque, la représentation du bien et du mal, la violence). Les héros (Charlemagne ou la représentation du père, Guillaume et l'image de la légitimité) et leur lignage (la structure imaginaire de la généalogie et les cycles).

Prerequisite: A course from the series French 20.261★ to 20.268★ or permission of the Department.

Three hours a week.

French 20.362

Le Roman

Le contenu précis de ce cours varie selon les années. Sujet pour 1996-97: *évolution du roman contemporain de Zola à Robbe-Grillet*. À travers l'analyse d'œuvres représentatives d'É. Zola, A. Gide, M. Proust, A. Malraux, J.-P. Sartre, A. Camus, et A. Robbe-Grillet.

Prerequisite: A course from the series French 20.261★ to 20.268★ or permission of the Department.

Three hours a week.

French 20.363

Études littéraires

Le contenu précis de ce cours varie selon les années. Prerequisite: A course from the series French 20.261★ to 20.268★ or permission of the Department.

French 20.364

Le Théâtre

Le contenu précis de ce cours varie selon les années. Sujet pour 1996-97: *designation littérature québécoise*. La modernité et ses prolongements dans le théâtre québécois. Analyse de l'écriture théâtrale et des écrits théoriques de Claude Gauvreau et de leurs prolongements actuels qui ont leur origine chez les Surréalistes, les Automatistes, les praticiens de la lignée post-artaudienne, la danse moderne et les théories du "performance art".

Prerequisite: A course from the series French 20.261★ to 20.268★ or permission of the Department.

Three hours a week.

French 20.366★

Littérature et sciences humaines (I)

Le contenu précis de ce cours varie selon les années. Prerequisite: A course from the series French 20.261★ to 20.268★ or permission of the Department.

Three hours a week.

French 20.367★

Méthodologie et littérature (I)

Le contenu précis de ce cours varie selon les années. Sujet pour 1996-97: *introduction à la rhétorique*. Ce cours propose: une présentation du "système" rhétorique depuis l'Antiquité jusqu'à nos jours; un exposé méthodique des procédés rhétoriques, figures, arguments, types d'argumentation, etc.; et une application: la lecture rhétorique de textes français assez divers, montrant ces procédés à l'oeuvre.

Prerequisite: A course from the series French 20.261★ to 20.268★ or permission of the Department.

ment.

Three hours a week

French 20.381

Aspects de la littérature canadienne-français

Le contenu précis de ce cours varie selon les années. Prerequisite: A course from the series French 20.261★ to 20.268★ or permission of the Department.

Three hours per week.

French 20.431

Traduction littéraire

Traduction de l'anglais au français et du français à l'anglais de textes littéraires. Analyses de traductions déjà parues. Retraduction.

Prerequisite: French 20.231 or permission of the Department.

Two hours a week.

French 20.432★

Morphologie et syntaxe du français

Grammaires modernes du français. Le cours a pour objet de familiariser les étudiants avec les grammaires modernes du français issues des derniers développements de la linguistique. On étudiera en particulier les systèmes grammaticaux.

Prerequisite: French 20.312 or permission of the Department.

Two hours a week.

French 20.433★

Sémantique et lexicologie du français

Sémantique, lexicologie et lexicographie françaises: sémantique de la phrase et du discours; l'organisation sémantique et la structuration du lexique; les principes gouvernant l'évolution du sens des mots; les procédés de fabrication des dictionnaires. Introduction à l'étude linguistique du sens.

Prerequisite: French 20.312 or permission of the Department.

Two hours a week.

French 20.434★

Stylistique littéraire

Le cours est destiné à sensibiliser les étudiants aux procédés de l'expression littéraire et à les préparer à la critique stylistique. On étudiera en particulier les points suivants: la théorie du style littéraire, la fonction de la langue dans l'expression littéraire; la phonostylistique: utilisation des accents, des rythmes, des sons; la stylistique des mots: l'utilisation du vocabulaire, les effets affectifs, les effets par évocation; les translations figuratives: métaphores, métonymies, etc.; la stylistique de la phrase, etc.

Prerequisite: French 20.232★ and 20.233★ or permission of the Department.

French 20.435

Linguistique appliquée: pédagogie de l'enseignement du français

Revue des notions de linguistique, de phonétique et de psycholinguistique se rapportant à l'apprentissage et à l'enseignement du français comme langue première et langue seconde. Etude des processus d'acquisition de la langue. Description de la langue pour la préparation à l'enseignement. Critique scientifique des méthodes et des méthodologies d'enseignement. Etude des relations entre les recherches

sur la communication et l'apprentissage du français.
Prerequisite: French 20.232★ or permission of the Department.

Three hours a week.

French 20.436★

Aspects de la linguistique du français III

Le contenu précis de ce cours varie selon les années.

Sujet pour 1996-97: *Les Français d'Amérique: genèse et comparaison*. Étude comparée et recherches portant sur différents aspects des variétés de français parlées en Amérique: langues en contact, histoire, évolution, aménagement, standardisation, droits linguistiques, survie du fait français, les îlots francophones, etc.; français régionaux, dialectaux, populaires, créoles français. Approche socio-descriptive, -historique, -comparative, -dialectologique.
Prerequisite: French 20.232★ or permission of the Department.

Two hours a week.

French 20.437★

Aspects de la linguistique du français IV

Le contenu précis de ce cours varie selon les années.

Prerequisite: French 20.232★ or permission of the Department.

French 20.461

Littérature d'Idees (I)

Le contenu précis de ce cours varie selon les années.

Sujet pour 1996-97: *la montée du nationalisme dans la littérature française au tournant du siècle: république et monarchie*. Affaire Dreyfus, culte de la terre et des morts, nationalisme intégral de Maurras, socialisme et marche à la guerre.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

Two hours a week.

French 20.462

Littérature d'Idees (II)

Le contenu précis de ce cours varie selon les années.

Sujet pour 1996-97: *le récit hugolien pragmatique: narratologie et persuasion*. Analyses de la pragmatique hugolienne narrative; systèmes de persuasion/dissuasion: du récit exemplaire au roman à thèse, Ethos, Pathos, Logos et récit.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

Two hours a week.

French 20.463★

Aspects de la littérature française (I)

Le contenu précis de ce cours varie selon les années.

Sujet pour 1996-97: *l'oeuvre romanesque de Simone de Beauvoir*. Ce cours propose d'étudier l'oeuvre romanesque d'une des personnalités littéraires les plus controversées de nos jours et qui est devenue, par la force des choses, la force du temps, la force des idéologies, un objet culturel mythique.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

Two hours a week.

French 20.464★

Aspects de la littérature française (II)

Le contenu précis de ce cours varie selon les années.

Prerequisite: A course from the series French 20.361 to 30.381 or permission of the Department.

French 20.466★

Littérature et sciences humaines (II)

Le contenu précis de ce cours varie selon les années.

Prerequisite: A course from the series French 20.361 to 30.381 or permission of the Department.

French 20.467★

Méthodologie et littérature (II)

Le contenu précis de ce cours varie selon les années.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

French 20.468★

Aspects de la littérature canadienne-française (I)

Le contenu précis de ce cours varie selon les années.

Sujet pour 1996-97: *Gabrielle Roy: autobiographie et fictions*. Le but de ce cours sera d'étudier la vision littéraire et les structures narratives de Gabrielle Roy à partir de son autobiographie posthume, *La Dérresse et l'enchantement* (1984). Les analyses récentes de l'autobiographie comme genre, de sa relation avec la fiction et de son rapport avec la différence sexuelle fourniront l'approche théorique du cours, et un point de départ pour l'analyse de l'oeuvre, dont l'évolution correspond à un mouvement du roman à la suite de nouvelles autobiographiques, et ensuite à l'autobiographie pure. Tous les hommes sont mortels et Une mort très douce, roman et "vie romancée".

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

Two hours a week.

French 20.469★

Aspects de la littérature canadienne-française (II)

Le contenu précis de ce cours varie selon les années.

Sujet pour 1996-97: *poétique de la poésie avant-gardiste au Québec*. Panorama de la poésie et des manifestes avant-gardistes de la littérature québécoise après 1948. Liens artistiques avec le futurisme, le cubisme, le surréalisme, le dadaïsme et le lettrisme. Le cours a pour objet d'initier au domaine disciplinaire de la poétique, à ses principes d'analyse descriptifs, esthétiques et idéologiques; de préparer à l'analyse et à l'interprétation textuelles; de montrer le champ transculturel de la littérature avant-gardiste québécoise dans ses oeuvres, ses mouvements et ses groupes artistiques et littéraires.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

Two hours a week.

French 20.470★

Littératures et cultures de la francophonie (I)

Le contenu précis de ce cours varie selon les années.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

French 20.471★

Littératures et cultures de la francophonie (II)

Le contenu précis de ce cours varie selon les années.

Sujet pour 1996-97: *littérature francophone*. Le Discours postcolonial et ses catégories. Dans la mouvance des relations socio-culturelles, idéologiques et problématiques entre la France métropolitaine et les pays francophones/créolophones, la littérature de ces pays devient un lieu de transformation des catégories d'analyse qui remettent en question les canons de la littérature européenne. Les écrits théori-

ques d'É. Glissant, P. Chamoiseau, R. Confiant, H. Bhabha, E. Said, Benítez-Rojo et F. Lionnet entre autres, aideront à cerner les composantes d'une critique dite postcoloniale et à examiner leur pertinence pour l'analyse de la production des écrivains francophones/créolophones.

Prerequisite: A course from the series French 20.361 to 20.381 or permission of the Department.

Two hours a week.

French 20.482

Initiation à la recherche

Comment et où effectuer des recherches pour l'étude d'une oeuvre, d'un auteur ou d'un thème. Les sources bibliothécaires et autres. Travaux pratiques: établissement de bibliographies, de fiches, d'une édition critique, etc.

Prerequisite: Permission of the Department.

French 20.483

Tutorial

Prerequisite: Permission of the Department.

French 20.484 ★

Tutorial

Prerequisite: Permission of the Department.

Graduate Courses Open to Undergraduates

(With permission of the Department)

French

- 20.504 ★ Linguistique du français canadien
- 20.506 ★ Linguistique du français langue seconde
- 20.507 ★ Traduction: théorie et pratique
- 20.520 ★ Aspect linguistique particulier
- 20.542 ★ Littérature et rhétorique
- 20.543 ★ Littérature et idéologie
- 20.544 ★ Auteurs I
- 20.547 ★ Genres II
- 20.548 ★ Littérature française I
- 20.549 ★ Littérature français II
- 20.550 ★ Littérature canadienne-française I
- 20.551 ★ Littérature canadienne-française II
- 20.562 ★ Littérature, société, communication
- 20.570 ★ Aspect littéraire culturel particulier

(Social Sciences/Science)

B349 Loeb Building
Telephone: 520-2561
Fax: 520-4301

Academic Administration

Chair
M.W. Smith

Supervisor of Graduate Studies
To be announced

Supervisor of B.A. Studies
M. Brklacich

Supervisor of B.Sc. Studies
To be announced

Teaching Staff

Professors
J. Clarke
M.W. Smith
D.R.F. Taylor
J.K. Torrance
A.I. Wallace

Associate Professors
D. Bennett
M. Brklacich
C.R. Bum
S. Dalby
M.F. Fox
D. King
F. Mackenzie
S. Mackenzie
J.E. Tunbridge
T.P. Wilkinson

Assistant Professors
F. Klodawsky
J. Lundberg
G. Ozornoy
S. Squire

Lecturer
N. Doubleday

Instructor
D. Patterson

Geoprocessing Analyst
S. Prashker

Cartographer
C.E. Earl

Distinguished Research Professor
P.J. Williams

Adjunct Research Professors
R. Bollman

G. Deecker
P. Johnson
V. Konrad
E.W. Manning
A. Rencz
A. Spector
I.C. Taylor

General Information

The Department of Geography has programs of study leading to the following Degrees: B.A. (Pass), B.A. (Honours), B.Sc. (Honours), and M.A. A special concentration in Geographic Information Processing (GIP) is available under the B.A. (Honours) program. In addition, informal concentrations can be developed (with particular reference to Canada and parts of northern lands, and the Third World) in: urban studies; regional development; economic geography; resource and land-use planning; cultural, historical and political geography; physical geography and environmental management. Geographic skills are developed in areas such as: air photo interpretation; remote sensing; traditional and computer cartography and data processing. A mixture of classroom, laboratory, seminar and field studies is used in the program.

It is also possible to complete joint B.A. Pass and Honours programs between Geography and many Arts and Social Science disciplines, including Law, Economics, History, Anthropology, Psychology, Political Science, Canadian Studies, Sociology, Journalism and Biology. There is also a Combined Honours Geography and Biology program. Even without the formality of a Combined program it is possible for those pursuing a single Pass or Honours program in Geography to develop a subsidiary thematic or regional concentration by taking a variety of non-geography electives. Please contact the Department of Geography for information about these possibilities.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81 for B.A. programs and p. 112 for B.Sc. programs), in addition to all departmental regulations and requirements as set out below.

B.A. Programs in Geography

B.A. (Honours) Program

The Honours program in Geography is offered for students who wish to prepare for graduate study, a career in planning, government, business, or other specialization in which the field of geography offers the appropriate training. Information on recommended patterns of courses related to various interests is available from the department. There is substantial freedom in the program for students to

take courses of special interest in the University, as well as courses in geography and related disciplines.

A formal concentration is offered in Geographic Information Processing for students who wish to focus on the acquisition, management, display and use of geographic information. Students will be involved with microcomputer-based techniques of data management and display and with various applications in planning, environmental and resources management, and demographics.

Students reading for an Honours degree must satisfy the general Faculty regulations for Honours (p. 75). Fourth-year Honours students may take 0.5 credit listed in the *Graduate Studies and Research Calendar* only if they have a B+ GPA in Geography and permission of the Department.

Honours in Geography

Students admitted to the Honours Geography program are required to complete the equivalent of 20.0 credits beyond the OSSD or Qualifying-University year in Arts or Social Sciences. The equivalent of at least 11.0 credits and normally not more than 13.0 credits must be in Geography and must include:

1. 1.0 credit in Geography at the 100-level. Geography 45.101 is recommended;
2. Geography 45.204, 45.210★ (or 45.211★), 45.220★, and 45.230★;
3. Either (i) Geography 45.491★ and 45.492★ or (ii) 45.499;
4. at least 6.5 additional Geography credits above the 100-level, of which at least 3.0 must be at the 300-level and at least 2.0 must be at the 400-level. A Geography field course above the 200-level (normally Geography 45.300★) must be included.

Combined Honours

Students taking Combined Honours in Geography and another subject are required to complete the equivalent of at least 7.0 credits and normally not more than 9.0 credits in Geography which must include:

1. 1.0 credit in Geography at the 100-level. Geography 45.101 is recommended;
2. One of Geography 45.210★ or 45.211★ and one of 45.220★ or 45.230★;
3. Geography 45.204;
4. at least 3.0 additional Geography credits above the 100-level, 2.0 at the 300-level and 1.0 at the 400-level.
5. either (i) Geography 45.491★ and 45.492★, or Geography 45.499 or (ii) an Honours research essay or equivalent in the other Honours department and an additional Geography credit at the 400-level.

B.A. Combined Honours in Biology and Geography

For Geography requirements see above; for Biology requirements see p. 154. Students must contact both departments for advice.

Honours in Geography with a Concentration in Geographic Information Processing (GIP)

This is a limited enrolment concentration. Admission to the concentration is by application through the Department of Geography. The deadline for application is June 1 for early September. Students from other institutions should consult the admissions section of this Calendar for deadlines and procedures. (See p. 31.)

To be considered for admission to the concentration, students must:

1. satisfy the requirements for admission to, or continuation in, the Honours program in Geography, and all Faculty regulations pertaining to Honours programs (See p. 76.);
2. have completed at least 3.0 credits in Geography, including at least 1.0 credit from the GIP core courses listed below. A GPA of 6.5 or better must be attained in the GIP course(s).

Admissibility to the concentration is determined by calculating the simple average of the GPA achieved in the GIP core course(s) completed at the time of application and the GPA achieved on all completed Geography courses.

Admission will be determined according to descending order of simple average attained, until the full complement of places available, on an annual basis, has been filled. Up to twelve candidates who satisfy the admission requirements stated above may be admitted.

To continue in the concentration, a GPA of 6.5 or better is required in the GIP core courses.

To graduate in the concentration, candidates must achieve a GPA of 6.5 or better in the GIP core courses, in addition to both the GPA in Geography courses overall and the CI required for graduation with Honours.

The equivalent of at least 11.0 credits and not more than 13.0 credits must be in Geography and must include:

1. 1.0 credit in Geography at the 100-level. Geography 45.101 is recommended;
2. Geography 45.210★ (or 45.211★); 45.220★ and 45.230★;
3. 5.5 credits in Geographic Information Processing as follows: 45.204, 45.302★, 45.303★, 45.304, 45.307★, 45.403★, 45.406★, 45.408★, 45.446★ (with placement in a GIP-related setting);
4. 1.5 additional credits in Geography at the 200-level or higher;
5. 0.5 in Geography at the 300-level or higher;
6. Geography 45.491★/492★ or 45.499, with an emphasis on the nature and/or use of Geographic Information Processing.

B.A. (Pass) Program

This program is offered for students who wish a liberal arts education with emphasis in geography. Guidance on patterns of courses for particular interests is available from the Department.

Students admitted to the Pass Program in Geography

are required to complete the equivalent of at least 7.0 credits and normally not more than 9.0 credits in Geography, which must include:

1. 1.0 credit in Geography at the 100-level. Geography 45.101 is recommended;
2. Geography 45.204, 45.210★ (or 45.211★), 45.220★, 45.230★;
3. At least 3.5 additional Geography credits above the 100-level, of which at least 2.5 must be at the 300- or 400-level.

Combined B.A. (Pass) Programs

Students admitted to a Combined Pass Program in Geography and another department are required to complete the equivalent of at least 5.0 credits and normally not more than 7.0 credits in Geography, which must include:

1. 1.0 credit in Geography at the 100-level. Geography 45.101 is recommended;
2. One of Geography 45.210★ or 45.211★, and one of 45.220★, or 45.230★;
3. At least 3.0 additional Geography credits above the 100-level; of which at least 1.5 must be at the 300- or 400-level.

B.Sc. Programs in Geography

B.Sc. (Honours) Program

The Bachelor of Science Honours program in Physical Geography is designed to give the student an understanding of the earth's surface as humanity's physical environment. The student will specialize in the study of properties and processes of the earth's surface materials and atmosphere.

The program consists of 20.0 credits beyond the OSSD or Qualifying-University year Science, selected in a pattern approved by the Supervisor of Honours Studies in the Department of Geography, and consistent with the following requirements:

1. The First year of the program will be consistent with Faculty of Science requirements for First-year Science. (Note that Physics 75.101★ and 75.102★, or 75.105 is required in Second year if not taken in First year.)
2. The program will contain 8.0 credits in Geography at or beyond the 200-level, including the Honours Research Project, Geography 45.496, which should be taken in the Fourth year; and 7.0 credits selected from the list below, of which at least 2.0 must be at the 300-level and at least 2.0 at the 400-level. These should include Geography 45.210★, 45.211★, 45.311★, 45.312★, 45.315★ and 45.318★. In special cases students may take an appropriate graduate course in their Fourth year, with permission of the Supervisor of Graduate Studies.
3. The remaining 7.0 credits must include:
 - (a) 2.0 approved credits in Science, not in Geography, beyond the 100-level (Geology 67.232★ and 67.281★ are recommended);
 - (b) 2.0 approved credits in Science, Computer Science or Engineering;

(c) 2.0 credits in Arts or Social Science electives, 1.0 of which must be an approved credit not in Geography;

(d) 1.0 free elective.

Physical Geography Courses

- | | |
|---------|---|
| 45.105 | Introduction to Geoscience |
| 45.204 | Geographic Information and Analysis |
| 45.210★ | The Physical Environment |
| 45.211★ | Physical Basis of Environmental Management |
| 45.300★ | Honours Field Course |
| 45.302★ | Air Photo Interpretation and Remote Sensing |
| 45.303★ | Quantitative Geography |
| 45.304 | Geographic Information Processing |
| 45.307★ | Cartographic Theory and Design |
| 45.311★ | Biophysical Resource Assessment |
| 45.312★ | Geomorphology |
| 45.313★ | Watershed Hydrology |
| 45.315★ | Climatology and Climatic Change |
| 45.318★ | Soil Properties |
| 45.319★ | Soils and Environment |
| 45.400★ | Field Studies |
| 45.402★ | Problems in Physical Geography |
| 45.403★ | Remote Sensing of the Environment |
| 45.404★ | Environmental Impact Assessment |
| 45.406★ | Computer-Assisted Cartography |
| 45.408★ | Geographic Information Systems |
| 45.411★ | Quaternary Geography |
| 45.412★ | Terrain Analysis |
| 45.413★ | Hydrology |
| 45.414★ | Microclimatology |
| 45.417★ | Introductory Soil Mechanics and Engineering Geology |
| 45.418★ | Geocryology |

Note:

A Human Geography course is recommended as one of the Arts or Social Science electives.

Combined Honours B.Sc. in Biology and Physical Geography

Program advisers are Lenore Fahrig and to be announced.

Students desiring a comprehensive basic education in both Biology and Physical Geography may apply to a Combined Honours B.Sc. program. Applicants must satisfy entry requirements of the Honours B.Sc. program. Course requirements of the Combined Honours B.Sc. program are as follows:

1. Biology 61.103★ and 61.104★, Geography 45.105, Mathematics 69.107★ and 69.117★ or 69.257★, Chemistry 65.100.
2. 2.0 optional credits that are acceptable courses offered by the Faculties of Arts or Social Sciences. A credit in Geography, other than the Physical Geography courses on p. 284, is recommended.
3. 1.0 additional Science credit from the list on p. 110 (Physics 75.101★ and 75.102★, or 75.105 is required unless OAC Physics is presented as an entrance credit).
4. 1.0 free option credit (unless Biology 61.102 (no longer offered) is taken in lieu of the OAC in Biology. See Biology program for entry with and without OAC in Biology).

5. 10.0 credits in Biology (or Biochemistry) and Physical Geography (see preceding list of courses) beyond First-year level, including at least 0.5 credit involving a field course. Not more than 6.0 credits in this group should be taken in one department and not more than 6.0 may be at the 200-level.

6. 1.0 additional credit in Science or Computer Science above the 100-level, not in Biology or Geography and chosen in consultation with the student's program adviser.

7. Biology 61.498 or Geography 45.496.

Combined Honours B.Sc. in Geology and Physical Geography

Program advisers are F. Michel and to be announced.

A grade of C+ or better in Geography 45.105/Geology 67.105 and overall Honours standing are required for admittance to the program. Program requirements are as follows:

1. Geography 45.105 or Geology 67.105†, Chemistry 65.100, Mathematics 69.107★ and 69.117★ and Physics 75.101★ and 75.102★, or 75.105;

2. 5.0 credits in Geology beyond First-year level, including 67.221★, 67.233★, 67.228★, 67.232★, 67.281★, 1.5 credits in Geology at the 300-level or above, and 1.0 credit in Geology at the 400-level;

3. 5.0 credits in Physical Geography beyond First-year level from list on p. 284, to include: Geography 45.210★, 1.5 credits in Physical Geography at the 200-level or above, Geography 45.302★, 45.312★, 45.315★, 45.318★ and 1.0 credit in Physical Geography at the 400-level;

4. Geography 45.496 or Geology 67.498;

5. 1.0 credit in Mathematics beyond First-year level and/or Computer Science. (Mathematics 69.257★ and Computer Science 95.104★ are recommended.)

6. 2.0 Arts or Social Science elective credits†††;

7. 2.0 credits chosen from Arts, Social Science, Science or Engineering.

† Students who have taken Geology 67.100 may substitute, with permission of the program advisers, Geology 67.100 for 67.105/45.105.

†† Geology 67.281★ precludes additional credit for Geography 45.299★, (no longer offered).

††† A Human Geography course is recommended in the program.

Graduate Programs

The Department of Geography offers graduate programs in human geography, physical geography and geotechnical science. For further details consult the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions* and *Class Schedule* booklet published in the summer.

Geography 45.101

The Geographic Web

Introduces the major themes of geographic analysis, focusing (1) on the interdependencies between societies and their natural environments, and (2) on the social, economic, cultural and political forces that are reflected in the spatial distributions of human activity at scales ranging from the international to the local. Methods of acquiring and interpreting geographical information are reviewed.

Note: Total credits for Geography 45.101, 45.102★ and 45.103★ cannot exceed 1.5.

Section A: Lectures and practical work/discussion three hours a week; Section B: Tutored modules, self-paced, three hours a week.

Geography 45.102★

Contemporary Issues: Environment, Resources and Society

Examination of the variety of geographic factors operating in the contemporary world, emphasizing global and regional issues in which environmental, economic geography and resource problems are crucial; organized around a series of themes which include global climatic change, desertification, global food problems, the geographic impact of declining oil supply, and the world oceans — changing conditions and role.

Note: Total credits for Geography 45.101, 45.102★ and 45.103★ cannot exceed 1.5.

Lectures three hours a week.

Geography 45.103★

Contemporary Issues: Territory, Culture and Political Space

Examination of the variety of geographic factors operating in the contemporary world, emphasizing global and regional issues in which political and cultural geography is central; organized around a series of themes including colonial linkages to Third World development, metropolitan dominance and "micro-states," diffusion of technology and values, territorial integration and fragmentation.

Note: Total credits for Geography 45.101, 45.102★ and 45.103★ cannot exceed 1.5.

Lectures three hours a week.

Geography 45.105

Introduction to Geoscience

A survey of processes operating within the Earth and at its surface: the hydrologic cycle, oceans, earth structure, tectonics, rocks, minerals, history of life on the earth, climatic change, soils, landforms and resources. This course is designed for students who wish to understand the physical environment of the planet they inhabit. (Also listed as Geology 67.105.) Precludes additional credit for Geology 67.100. Lecture three hours a week, laboratory three hours a week, a field excursion.

Geography 45.204

Geographic Information and Analysis

Examines the characteristics, utility, analysis, presentation, and geographic application of information derived from field-work, maps, statistical and literary sources, remotely sensed imagery, and geographic information systems. An integrated micro-computer orientated approach is emphasized, paying particular attention to graphic and cartographic design, and exploratory and inferential statistical procedures. Field work forms an integral part of the course.

Prerequisites: 1.0 credit in Geography at the 100-level and Second-year standing.

Note: Restricted to students in Geography Honours, Combined Honours or Pass programs: not available to students in Geography Combined Pass programs. Lectures two hours a week, laboratory two hours a week.

Geography 45.210★

The Physical Environment

The physical geography of natural environments, emphasizing the kinds of earth materials, their properties, and the processes that act upon them.

Prerequisite: 1.0 credit in Geography at the 100-level, or a First-year science course.

Lectures two hours a week, laboratory three hours a week.

Geography 45.211★

Physical Basis of Environmental Management

The nature, use and management of the physical environment, with examples drawn from the climate, water, land and soils of the local region. Regional environmental concerns are examined.

Prerequisite: 1.0 credit in Geography at the 100-level or Second-year standing.

Lectures three hours a week, laboratory three hours a week.

Geography 45.220★

Geography of the Global Economy

An overview of the global economy, focusing on the geographical pattern of its evolution and its resource base. Theories of spatial relationships at various scales, including the development of core-periphery contrasts, national urban systems and regional specializations in agriculture and industry.

Prerequisite: 1.0 credit in Geography at the 100-level, or Second-year standing.

Note: Geography 45.101 is recommended.

Lectures and discussion three hours a week.

Geography 45.230★

The Cultural Landscape

Examination of ways people varyingly create, modify and interact with the physical environment. Emphasis is placed on the roles of attitudes, ideas, behaviour and organizational structures, as well as contrasting perceptions of environment.

Prerequisite: 1.0 credit in Geography at the 100-level, or Second-year standing.

Note: Geography 45.101 is recommended.

Lectures and discussion three hours a week.

Geography 45.231★

Conflict and Accord in the Modern World

The role of cultural, economic, political boundaries and geographical context, with emphasis on popular

and media representations of the geography of war and peace in contemporary ethnic, environmental and territorial conflicts, peace-keeping and peace-making.

Prerequisite: Geography 45.101 or 45.103★.

Lectures and discussion three hours a week.

Geography 45.255★

Canada: Contemporary Geographic Issues

Analysis and interpretation of Canada, its regions and localities, using a range of geographical concepts. The focus is on the interactions among society, the economy and the environment, and related policy issues.

Precludes additional credit for Geography 45.305★ and 45.355★ (both no longer offered).

Prerequisite: Second-year standing or permission of the Department.

Geography 45.300★

Honours Field Course

Geographical techniques of field observation, measurement, recording and analysis are examined in group and/or individual field projects. This course may only be taken once for credit. There is no supplemental examination.

Prerequisite: Third-year Honours standing in Geography.

A residential field camp and group meetings three hours a week through the term.

Geography 45.301★

Social Geography Methods

Methods of acquiring, analyzing and presenting primary information specifically relating to contemporary issues in social geography, examining technical and ethical aspects of such topics as: mental mapping, sampling and questionnaire design, participant observation and interviewing, discourse analysis, and qualitative research methods.

Prerequisites: Geography 45.204, or Third-year standing and permission of the Department.

Geography 45.302★

Air Photo Interpretation and Remote Sensing

Introduction to aerial photography and remote sensing, image interpretation of land forms, surface materials and environmental phenomena; elements of photogrammetry and flight planning.

Prerequisite: Geography 45.204 or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

Geography 45.303★

Quantitative Geography

Multiple-regression and factor analytic techniques as applied to problems of classification, regionalization, explanation and hypothesis testing in geographical research. Various taxonomic algorithms are examined and an introduction to geographical models is provided.

Prerequisites: Geography 45.204 and enrolment in a Geography degree program or permission of the Department.

Lectures and laboratory three hours a week.

Geography 45.304**Geographic Information Processing**

The acquisition, manipulation, and display of spatially referenced information by means of micro-computers. The principles, design and application of spatial information systems for environmental and socio-economic data bases; concepts of computer-assisted cartography; and the use of micro-computer-based mapping systems.

Prerequisites: Geography 45.204 and Honours standing in Geography.

Note: Concurrent registration in Geography 45.307★ is recommended.

Lecture one hour a week, practical two hours a week.

Geography 45.307★**Cartographic Theory and Design**

Principles of cartography, cartographic communication and map design. The course includes practical work designed to provide experience in solving problems of cartographic representation.

Precludes additional credit for Geography 45.324★ and 45.325 (both no longer offered).

Prerequisites: Geography 45.204 and Third-year standing, or permission of the Department.

Lectures and practical three hours a week.

Geography 45.311★**Biophysical Resource Assessment**

The acquisition and interpretation of biophysical information, with regard to defining limitations on the use of the environment. The course consists of instruction in field and laboratory techniques with an emphasis on the biophysical resources of a local area.

Prerequisite: One of Geography 45.105/Geology 67.105, 45.210★, 45.211★ or permission of the Department.

Note: Geography 45.204 is recommended.

Lectures/laboratory/fieldwork five hours a week.

Geography 45.312★**Geomorphology**

Geomorphological agents of landscape change at the Earth's surface, emphasizing the role of water, ice and wind in erosion and deposition; use of geomorphic indicators in studies of environmental change.

Prerequisites: Geography 45.105/Geology 67.105, Geology 67.105, and Geography 45.210★ or 45.211★, or permission of the Department. B.A. students must have at least Third-year standing.

Lectures three hours a week, laboratory two hours a week, one field excursion.

Geography 45.313★**Watershed Hydrology**

Principles of hydrology at local and watershed scales, with an emphasis on: soil moisture regimes; field data collection and analysis of surface water or snow and ice conditions; hydrologic processes in cold environments; and regional runoff regimes in Canada.

Prerequisite: Geography 45.210★ or 45.211★.

Note: First-year mathematics and physics are recommended.

Lectures three hours a week, laboratory two hours a week, two field excursions, including a 2-day excursion. Students are responsible for long-distance

transportation, food and lodging costs associated with the field excursions.

Geography 45.315★**Climate and Atmospheric Change**

An understanding of the global climate system, with emphasis on global change and variability over the historical and modern periods. The changing composition of the atmosphere and its impact on climate. Analysis and interpretation of climatic and atmospheric data. Modelling of climate systems.

Prerequisite: Geography 45.210★ or permission of the Department. Students should also have taken Geography 45.204 or have equivalent knowledge of microcomputers.

Lecture/laboratory five hours a week.

Geography 45.318★**Soil Properties**

The physical and chemical properties of soils; soil-water relationships, weathering processes, soil mineralogy, cation exchange, soil pH. A plant-oriented perspective predominates.

Precludes additional credit for Geography 45.308 (no longer offered).

Prerequisite: Geography 45.105, or 45.210★, or permission of the Department.

Lectures/laboratory five hours a week.

Geography 45.319★**Soils and Environment**

The formation and development of soils, soil classification, soil fertility, soils and environmental concerns, land degradation.

Precludes additional credit for Geography 45.308 (no longer offered).

Prerequisite: Geography 45.318★ or permission of the Department.

Geography 45.320★**The Canadian City: Environment, Structure and Contemporary Problems**

The internal structure of the Western city with explicit application to Canadian cities; current urban problems and their attempted resolutions, with particular focus on: inner city revitalization and peripheral expansion, movement toward metropolitan organization of the city; evolving transportation systems and their interaction with land use.

Prerequisite: Geography 45.220★ or permission of the Department.

Lectures three hours a week.

Geography 45.329★**Sustainable Development and Third World Environments**

In light of theories of development and underdevelopment, and in the context of environmentally sustainable development, issues such as land degradation, deforestation, agricultural productivity, climatic change, energy supplies and urban growth are examined at scales ranging from the intra-household and local to the international.

Prerequisite: Geography 45.220★ or 45.230★ or 45.231★ or permission of the Department.

Lectures three hours a week.

Geography 45.330 ★

Sustainable Development in Sub-Saharan Africa

A historical analysis of contemporary problems faced by selected states in sub-Saharan Africa, focusing on the question of environmental sustainability in the context of political, social and economic change. Issues are discussed at scales ranging from the intra-household and local to national.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

Geography 45.335

The Development of Canada: The Historical Geographical Perspective

Canada from pre-history to the present. The course addresses issues of culture and economy in a geographical context. Methodology in historical geography is examined.

Prerequisite: Geography 45.230 ★ or History 24.230 or 24.231 or permission of the Department.

Lectures three hours a week.

Geography 45.336 ★

Resource Analysis in Geography

Human dimensions of resource assessment, use and management; examination of topics relating to resource allocation theory and methods, carrying capacity, environmental and social impact assessment, public participation and resources policies.

Precludes additional credit for Geography 45.333 ★ and 45.334 ★ (no longer offered).

Prerequisite: At least Third-year standing in Geography or Environmental Studies or Environmental Science, or permission of the Department.

Lectures and laboratory three hours a week.

Geography 45.337 ★

Systematic Political Geography

A survey of classical and contemporary themes in the politics of space, place and boundary making; an introduction to recent political geography theories concerning such themes as social movements, development, environmental security and the role of gender in questions of space and power.

Prerequisite: Geography 45.231 ★ or permission of the Department.

Lectures three hours a week.

Geography 45.344 ★

Geography of Economic Restructuring

Theoretical frameworks for interpreting the changing geography of production and employment in all sectors of the economy and the impacts of economic restructuring on regions and communities. The role of firms, governments, and households will be considered. Analysis and examples will involve geographical scales from the global to the local and will demonstrate the linkages between developments in different parts of the world.

Precludes additional credit for Geography 45.340 ★ and 45.341 ★ (both no longer offered).

Prerequisite: Geography 45.220 ★ or Third-year standing and permission of the Department.

Lectures three hours per week.

Geography 45.351 ★

Northern Lands

An analysis of the physical characteristics, historical geography, economic resources, settlement patterns

and problems and the future development of Arctic and Subarctic lands, focusing primarily on Canada.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

Geography 45.360 ★

The Soviet Union and Successor States: A Geographic Survey

A general review of the physical, social and economic geography of the Soviet Union and successor states, with detailed analyses of selected topics related to social and population conditions, resources development and environmental problems, including comparisons with North America.

Prerequisite: Third-year standing.

Offered in alternate years to Geography 45.361 ★.

Lectures three hours a week.

Geography 45.361 ★

Eastern Europe: A Geographic Survey

A general review of the physical, social and economic geography of Eastern Europe, with detailed analyses of selected topics related to social and population conditions, resources development and environmental problems, including comparisons with North America.

Prerequisite: Third-year standing.

Offered in alternate years to Geography 45.360 ★.

Lectures three hours a week.

Geography 45.362 ★

Geography of Southern Africa

Broad geographical coverage of the subcontinent from Zambia southwards with particular reference to the environmental, historical, economic, cultural and political dimensions necessary to understand the contemporary context of and around South Africa.

Precludes additional credit for Geography 45.395 ★ (if taken in 1990-1994).

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

Geography 45.370 ★

Population Geography

Studies of the distributional aspects of population attributes. The areal patterns of population characteristics and their spatial variations associated with differences in the nature of places are examined. Migratory movements are considered within the framework of spatial models of interactions between locations.

Prerequisite: Either Geography 45.230 ★ or 45.220 ★ or permission of the Department.

Lectures three hours a week.

Geography 45.395 ★

Selected World Regional Problems

Geographical analysis of topical problem areas in the world community.

Prerequisite: Third-year standing or permission of the Department.

Lectures three hours a week.

- **400-level courses are normally restricted to students with Fourth-year Honours standing. However, a student with Third-year standing may take 400-level courses provided the student has the necessary prerequisites, a Geography GPA of 6.5 or better, and permission of the Department.**

Geography 45.400★

Field Studies

Field observation and methodology in a selected region; individual or group basis.

Prerequisite: Permission of the Department.

Hours to be arranged.

Geography 45.401★

Problems in Human Geography

A course designed to permit a student to pursue his or her interests in a selected field of human geography. The student prepares papers for discussion with the tutor.

Prerequisites: Fourth-year Honours standing and permission of the Department (by special arrangement only).

Note: Normally only 0.5 credit in Geography 45.401★ may be presented for the degree and additional credit for Geography 45.402★ is precluded.

Hours to be arranged.

Geography 45.402★

Problems in Physical Geography

A course designed to permit a student to pursue his or her interests in a selected field of physical geography. The student prepares papers as the basis for discussion with the tutor.

Prerequisites: Fourth-year Honours standing and permission of the Department (by special arrangement only).

Note: Normally only 0.5 credit in Geography 45.402★ may be presented for the degree and additional credit for Geography 45.401★ is precluded.

Hours to be arranged.

Geography 45.403★

Remote Sensing of the Environment

The recording of earth features from suborbital and orbital altitudes and applications to the study of natural and human environments. Interpretation and geometry of the air photo; technical aspects include the electro-magnetic spectrum, active and passive sensors, sensor platforms, and visual and digital image analysis; practical applications are explored in such areas as agriculture, forestry, corridor mapping, hydrology, urban analysis and regional planning, and northern environments.

Prerequisites: Geography 45.302★ and Honours standing, or permission of the Department.

Lectures two hours a week, laboratory two hours a week.

Geography 45.404★

Environmental Impact Assessment

An examination of the principles, scope and purpose of environmental impact assessment, from conceptual and methodological points of view. A range of environmental issues is examined through class seminars, field trips and a field-based student project.

Prerequisite: Fourth-year Honours standing in Geography or Environmental Studies or Environmental

Science, or permission of the Department.

Note: Geography 45.311★ or 45.336★ is recommended.

Lectures and seminars three hours a week.

Geography 45.406★

Computer-assisted Cartography

A theoretical and practical introduction to computer-assisted cartography, with an emphasis on digital mapping algorithms. The laboratory work provides experience with digital cartographic techniques using microcomputers.

Precludes additional credit for Geography 45.326★ (no longer offered).

Prerequisites: Geography 45.307★ (or equivalent), and Fourth-year Honours standing, or permission of the Department. Students should have at least one Computer Science course (e.g. Computer Science 95.101★ or equivalent) or knowledge of data processing. Basic mathematical skills (linear algebra, geometry, and trigonometry) are assumed.

Lectures and laboratory three hours a week.

Geography 45.408★

Geographic Information Systems

A project oriented course. Groups investigate the feasibility of using GIS in a specific application. Additional technical material is presented to augment GIS and spatial analysis including: vector analysis, textual and fractal analysis, error propagation and accuracy assessment in GIS.

Prerequisites: Geography 45.304 and Honours standing in Geography.

Lectures two hours a week, practical two hours a week.

Geography 45.411★

Quaternary Geography

Changes in the physical environment of the earth during the last 2 million years; methods of studying recent earth history; the last ice age in Canada. (Also listed as Geology 67.415★.)

Prerequisites: Geography 45.315★ or permission of the Department.

Note: Geography 45.312★ and Geology 67.332★ are recommended.

Lectures three hours a week.

Geography 45.412★

Terrain Analysis

Statistical techniques of morphometric and spatial analysis; applications in geomorphology and geography.

Prerequisites: Geography 45.204 and Honours standing, or permission of the Department.

Lectures three hours a week.

Geography 45.413★

Hydrology

Offered in the Department of Civil and Environmental Engineering as Engineering 82.441★. (Also listed as Geology 67.419★.)

Geography 45.414★

Microclimatology

The formation of microclimates near the Earth's surface; energy and water flows; the interaction of at-

mospheric processes with the physical properties of surfaces.

Prerequisite: Geography 45.315★ or permission of the Department.

Lectures and laboratory three hours a week.

Geography 45.417★

Introductory Soil Mechanics and Engineering Geology

Offered in the Department of Civil Engineering as Engineering 82.328★. (Also listed as Geology 67.417★.)

Precludes additional credit for Geography 45.424★ (no longer offered).

Geography 45.418★

Geocryology

The effects of freezing and thawing on soils from thermodynamic and mechanical points of view; the distribution of seasonal ground freezing and permafrost; the ground thermal regime and its relationship to climate and earth materials; terrain features due to frost action; current geotechnical concerns relating to northern development.

Prerequisite: Geography 45.318★ or permission of the Department.

Lectures/laboratory three hours a week.

Geography 45.423★

Urban Revitalization

A seminar/field-work-based course that examines the recent revitalization of inner cities from an internationally comparative perspective. Topics of study include residential, commercial and institutional dimensions of revitalization, with particular reference to waterfronts and to heritage conservation issues.

Prerequisites: Geography 45.320★ and Fourth-year Honours Geography standing, or permission of the Department.

Seminar three hours a week; optional residential field work.

Geography 45.425★

Space, Place and Well-being

An examination of spatial variation in life-chances. Geographically varying access to goods such as health care, shelter, work, and security is considered in light of diverse ideas of equality.

Prerequisites: Geography 45.303★ and Fourth-year Honours standing or permission of the Department.

Geography 45.370★ is also recommended.

Lectures and seminars three hours a week.

Geography 45.426★

Health, Environment and Society

The social and environmental contexts of human disease are examined through the methods and concepts of spatial epidemiology. The ecology of communicable and degenerative diseases is examined in First- and Third-World situations.

Prerequisites: Geography 45.370★ and Fourth-year Honours standing or permission of the Department.

Lecture three hours a week.

Geography 45.427★

Urban Development and Analysis

Examines the relationship between changes in urban development and geographic theory, emphasizing

contemporary critical perspectives on selected urban issues.

Prerequisite: Fourth-year Honours Geography standing or permission of the Department.

Seminar three hours a week.

Geography 45.430★

Comparative Environmental Movements

This course will examine the emergence of contemporary, locally-based, environmental movements in Canada, Africa, Asia, and Latin America. Drawing on case studies, the objective is to analyze local environmental action in relation to the broader political economy and to assess such action in terms of long term sustainability of land use.

Prerequisites: Fourth-year Honours standing and 45.329★ or 45.330★ or permission of the Geography Department.

Seminar three hours a week.

Geography 45.431★

Advanced Cultural Geography

Cross-cultural thematic examination of territorial organization, territoriality, mental maps, geographies of the mind, and landscape impact of authority and ideology. Regional foci are principally Canada and Africa.

Prerequisite: Geography 45.230★ or permission of the Department. Geography 45.231★ recommended.

Seminar three hours a week.

Geography 45.433★

Urban Planning

Offered in the Department of Civil and Environmental Engineering as Engineering 82.433★ (82.333★).

Geography 45.434★

Transportation Engineering and Planning

Offered in the Department of Civil and Environmental Engineering as Engineering 82.334★ (82.434★).

Geography 45.435★

Historical Geography

The relation of geography and history, the use of field techniques, primary documents, model building and statistical methods in historical geography. Emphasis is given to local studies.

Also offered at the graduate level, with additional or different requirements, as Geography 45.545★, for which additional credit is precluded.

Prerequisite: Geography 45.335 or permission of the Department.

Geography 45.440★

Advanced Political Geography

Contemporary political geography theories and concepts are applied to the analysis of such matters as recent and contemporary regional conflicts and territorial disputes to: case studies of changing political arrangements including Western European integration and post-Cold War political reorganization in Eastern Europe; matters of environmental conflict and international security.

Prerequisite: Geography 45.337★ and Fourth-year Honours standing, or permission of the Department.

Seminar three hours a week.

Geography 45.442★**Transportation Geography**

Geographical appraisal of transportation systems in relation to their physical, social, and economic milieu. The role of transport in industrial location, regional development and trade patterns; problems of urban transport and Canadian transportation policy issues. (Also listed as Engineering 82.435★.)

Prerequisite: Geography 45.220★ and Fourth-year Honours standing or permission of the Department.

Geography 45.443★**Issues in Applied Economic Geography**

A problem-oriented course in the field of economic geography. Topics are drawn from a variety of areas of concern, such as agriculture, resource development, manufacturing and trade.

Prerequisite: Geography 45.344★ or permission of the Department.

Lectures and seminars three hours a week.

Geography 45.445★**Rural Land Use Analysis**

An examination of rural land use issues from physical and socio-economic perspectives, contemporary methods for rural land use evaluation, and rural land use policies.

Prerequisite: Geography 45.336★ and Fourth-year Honours standing, or permission of the Department.

Lectures and seminars three hours a week.

Geography 45.446★**Practicum in Geography**

Experience is gained in an employment environment through field placements of seven hours a week, providing the opportunity to observe and become involved in issues and research methods used by geographers. Academic requirements are satisfied through a term paper, which integrates the understanding gained from the placement with theoretical and empirical knowledge gained from a literature review, and participation in a class-forum.

Precludes additional credit for Geography 45.443★ (if taken before 1988-89), and for any other Social Science practicum.

Prerequisites: Fourth-year Honours standing in Geography and permission of the Department.

Geography 45.447★**Canadian Agriculture**

An examination of trends in farm organization and production, and issues arising from farming's wider relationships to the physical resource base, land market pressures, government policies and regulations, and agribusiness and marketing organizations. Precludes additional credit for Geography 45.443★ (if taken in 1994-95).

Prerequisites: Geography 45.255★ or 45.336★ and Fourth-year Honours standing, or permission of the Department.

Lectures and seminars three hours a week.

Geography 45.460★**The Changing Geography of Post-Communist Societies**

This course will focus on analysis and interpretation of the geographical dimensions of political and economic transition in the post-communist societies of Eastern Europe and the former U.S.S.R. Topics are

drawn from a variety of areas of geographical inquiry such as environmental degradation, resource management, population, spatial variation and inequality in the material and less tangible circumstances of life, industrial restructuring and regional development, urban and rural changes, energy, transportation, and foreign trade.

Prerequisites: Fourth-year Honours standing, Geography 45.360★ or 45.361★ or permission of the Department.

Lectures and seminars three hours a week.

Geography 45.490★**Development of Geographic Thought and Methodology**

The development of ideas and methods in geography. An examination and discussion of original works. Recommended for Honours students.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Lectures three hours a week.

Geography 45.491★**Honours Research Project Design**

Design and implementation of a geographical research project, based on primary and secondary sources of information. The student will select a research topic, place it in its intellectual and methodological context and develop an appropriate research plan. The project may take the form of an experiment, a case study, a survey, archival research, or such other work as meets with the Department's approval.

Prerequisite: Fourth-year Honours standing in Geography.

Lectures and discussion three hours a week.

Geography 45.492★**Honours Research Project Report**

Under the supervision of a faculty member, the student will complete the research project initiated in Geography 45.491★ and submit a project report.

Prerequisite: Geography 45.491★.

Hours to be arranged with faculty adviser.

Geography 45.496**Honours Research Project**

Candidates for B.Sc. with Honours in Geography undertake a research project based on a laboratory or field problem. The project is supervised by a member of the department and a written report must be submitted. The candidate may be examined orally on the report.

Prerequisite: Fourth-year Honours standing in the Geography B.Sc. Honours program.

Hours to be arranged.

Geography 45.499**Honours Research Essay**

A student in the fourth year of B.A. Honours or Combined Honours in Geography may write an Honours essay or equivalent. The essay counts as the equivalent of 1.0 credit. Students work under an individual faculty adviser. The subject for research is decided upon in consultation with the supervisor.

Prerequisites: Fourth-year Honours standing in Geography and permission of the B.A. Honours Supervisor.

Hours to be arranged with faculty adviser.

(Arts)

1315 Dunton Tower
Telephone: 520-2116

Academic Administration

Chair

To be announced

Supervisor of Graduate Studies

Jutta Goheen

Supervisor of Undergraduate Studies

Robert Gould

Teaching Staff

Professor Emeritus

E.M. Oppenheimer

Professor

Jutta Goheen

Associate Professors

Arnd Bohm

Robert Gould

Basil Mogridge

Adjunct Research Professor

Joseph B. Dallett

Sessional Lecturers

Irmtraut Lyon

Thomas Mueller

General Information

German language and literature can be seen in various ways: in their historical dimension, with all the wealth of cultural context that implies; as the subject matter of more theoretical frames of reference such as linguistics or aesthetics; and as contemporary means of communication. These three approaches all play a part in German studies at Carleton.

The Department's offerings range from German for beginners (1.0 credit or 2.0 credits) up to the M.A. program. One can take a single German course, or a sequence, or a whole program (Pass or Honours). In the latter case, students often find that to have a twofold specialization (i.e. to take a Combined Pass or Combined Honours) suits them. It is also possible, while to some extent specializing in German, to take a sequence of two or three courses in another field, such as economics, or computer science, or another language.

The combinations are many and various, and the Department accommodates both those whose prime objective is practical command of the language (as taught in a university context) and those who wish to study an unusually rich literature.

In addition to the foregoing, the German Department, in collaboration with other departments in the University, offers an Honours Program in German Studies. This program is distinctively structured to enable students to obtain a greater understanding of important aspects of the German-speaking area of Europe and its relationships with its neighbours.

Unless otherwise noted, the Department's courses are taught wholly or partly in German. Students have access to the language laboratory, including computer-assisted learning. Language courses are not available to auditors. Literature courses may be audited with permission of the Department.

Lists of required readings are available from the Secretary of the Department.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Intensive Introductory German

Students considering beginning the study of German at Carleton should take particular note of German 22.120, Intensive Introductory German (2.0 credits). This course is designed to enable students to reach in one year the level of proficiency normally attained over two years in German 22.115 and 22.205.

Undergraduate Programs

There are five alternative undergraduate programs all of which normally include the following core in German:

1. 22.120 Intensive Introductory German; or 22.205 Intermediate German A; or 22.206 Intermediate German B;
2. 22.209★ Spoken German and 22.211★ Descriptive Analysis of Contemporary German Vocabulary and 22.213 Written German: Analysis and Practice;
3. 22.240 Introduction to Literary Reading.

To that core, students during their program, and in consultation with the Department, add a number of options. The number of these options to be added to the core varies according to the program.

Students should note that before 1992-93, German 22.213 was two separate half-credits, German 22.210★ and 22.212★.

Students who completed German 22.250 prior to 1988-89 may substitute German 22.250 for 22.240.

Students whose backgrounds preclude their taking any of the core language courses must still complete the total of credits required for their program.

Single Pass

Core plus 2.0 credits in German, at least 1.0 of them at the 300-level; i.e. 6.0 in all.

Combined Pass

Core plus 1.0 credit in German, at least 1.0 of them at the 300-level; i.e. 5.0 credits.

Single Honours

Core plus 5.0 credits in German, 1.0 of which must be German 22.350. Of these 9.0 total credits in German, at least 1.0 must be at the 400-level.

Combined Honours

Core plus 3.0 credits in German, 1.0 of which must be German 22.350. Of these 7.0 total credits in German, at least 1.0 must be at the 400-level.

Honours German Studies

Core plus 3.0 credits in German. Of these 7.0 total credits in German, at least two must be at the 400-level and include German 22.498 (double weighted), or 22.491 and another 400-level course. See below for further details of German Studies requirements.

All Programs

Students with an advanced knowledge of German will select a suitable course program in consultation with the Department.

A written language test is normally part of the degree requirements; students must take the test no later than December for June graduation, May for November graduation, and August for February graduation. The test must be completed before graduation.

Students are reminded that their graduation is governed by the regulations in force at the time of their admission to the program.

Combined Pass Programs

Combined Pass programs are possible with a number of other subjects, among them Art History, Music, History, Philosophy, Political Science, Religion, Linguistics, Latin, English, French, Spanish, Italian and Russian. Early consultation with the departments concerned is advised.

Combined Honours Programs

Combined Honours are possible with a variety of subjects. Among the possibilities are German with Art History, Economics, English, French, Geography, History, Italian, Latin, Linguistics, Mathematics, Music, Philosophy, Political Science, Psychology, Russian or Spanish. Early consultation with the departments concerned is strongly advised.

All Honours programs, including Combined ones, are designed to serve, where required, as a basis for further work in German at the graduate level.

Honours in German Studies

The Department of German offers an Honours program in German Studies. The guiding principle of the program is to provide a key to understanding the foundations of the culture of the German-speaking nations. The curriculum integrates significant fields of study. Students will be able to concentrate on aspects of the late nineteenth and the twentieth centuries.

Students who wish to register in the program are advised to contact the Chair of the Department. On admission to the program, students make a proposal to the Co-ordinating Committee concerning the program of studies they wish to take, explaining and justifying their selection of courses. The choice of courses is subject to the approval of the Co-ordinating Committee.

German Studies Course Requirements

A. German Courses

7.0 credits from German (including the core courses as for German Honours and *either* German 22.498 (double-weighted) which will cover an interdisciplinary topic *or* German 22.491 with an interdisciplinary topic and 1.0 other credit at the 400-level) and Language Examination.

22.120	Intensive Introductory German
22.206	Intermediate German B
22.209 ★	Spoken German
22.211 ★	Descriptive Analysis of Contemporary German Vocabulary
22.213	Written German: Analysis and Practice
22.240	An Introduction to Literary Reading
22.301 ★	Advanced Spoken German
22.302 ★	Advanced Written German
22.311 ★	Linguistic Text Analysis
22.312	Twentieth-Century German as a Literary Language
22.348 ★	A Genre in German Literature
22.350	German Literature of the Eighteenth Century
22.352 ★	Seminar on a Nineteenth-Century Topic
22.380	German Literature in the Twentieth Century
22.402 ★	Translation
22.403 ★	German Syntax
22.405	Formal German Speech (Die deutsche Rede)
22.412	History of the German Language
22.430	Medieval Language and Literature
22.440	Early Modern German Literature
22.454 ★	Seminar on a Topic from the Eighteenth Century
22.469 ★	Selected Authors of the Nineteenth Century
22.470	Seminar on a Literary or Linguistic Topic
22.471 ★	Seminar on a Selected Topic
22.472 ★	Literary Semiotics
22.483 ★	Language and Society in Twentieth-Century Germany
22.492 ★	Tutorial in Advanced Translation

B. Course Requirements in Other Disciplines

6.0 credits, including 2.0 at the 400-level, in one of the following disciplines:

History

1.0 credit from:

- 24.101 History of Western Civilization
- 24.102 The World in the Twentieth Century
- 24.109 Turning Points in Modern History

At least 1.0 credit from:

- 24.221 History of Science
- 24.223 A History of Early Modern Europe, 1500-1789
- 24.224 The Revolutionary Tradition in Europe, 1789-1900
- 24.259 A History of Germany
- 24.270 European Economic History, 1500-1914
- 24.280 The Diplomatic History of Europe, 1815-1914

- 24.281 War and Peace in the Modern World

At least 1.0 credit from:

- 24.305 Medieval Thought
- 24.317 The European Family
- 24.359★ The History of the Habsburg Monarchy, 1526-1918

- 24.370 European Economic History since 1914

- 24.378★ The Reformation Era in European History, 1409-1648

- 24.380 International History, 1941-1956

- 24.388 Historical Theory and Method

2.0 credits from:

- 24.455 Selected Problems in Modern German History
- 24.480 Selected Problems in the Diplomacy of the Great Powers, 1906-1945
- 24.481 Diplomatic and Strategic Problems in the Second World War

Philosophy

1.0 credit from:

- 32.103★ Philosophical Texts I
- 32.107★ Philosophical Texts II
- 32.110 Looking at Philosophy
- 32.160 History of Philosophy

3.0 credits from:

- 32.215 Modern Philosophy: 1600-1800
- 32.220 Introduction to Marxist Philosophy
- 32.225 Medieval and Renaissance Philosophy
- 32.270 Existentialism and Continental Philosophy
- 32.280 Language and Communication
- 32.290 Truth and Propaganda
- 32.305 German Philosophy: Eighteenth and Nineteenth Centuries
- 32.306★ Kant to Hegel
- 32.340 Aesthetics

2.0 credits from:

- 32.401★ Philosophy of Language
- 32.473★ Special Topic in Medieval Philosophy
- 32.477★ Special Topic in Nineteenth Century Philosophy
- 32.478★ Special Topic in Nineteenth Century Philosophy
- 32.479★ Special Topic in Twentieth Century Philosophy
- 32.480★ Special Topic in Twentieth Century Philosophy

Political Science

- 47.100 Introduction to Political Science

3.0 credits from:

- 47.215 Comparative Politics
- 47.230 History of Political Thought
- 47.270 Quantitative Political Science Research Methods
- 47.316★ Revolution
- 47.317★ The Causes of War
- 47.321 Government and Politics of Western Europe
- 47.330★ Politics and Literature
- 47.331★ Politics and Psychoanalytic Thought
- 47.333 Modern Political Thought and Ideologies
- 47.334 Ancient and Medieval Political Thought

2.0 credits from:

- 47.430★ Concepts of the State
- 47.431★ Marxist Thought
- 47.432★ Contemporary Marxism
- 47.434 Political Inquiry
- 47.435 Contemporary Political Theory

C. Additional Requirements

4.0 credits in one of the following disciplines:

Art History

- 11.100 A History of Western Art: Prehistory to the Present
- 11.242★ Eighteenth-Century European Art
- 11.243★ Nineteenth-Century European Art
- 11.260★ Twentieth-Century European Art
- 11.286★ Art and Ideas: From Ancient Greece to the Twentieth Century
- 11.287★ Art and Ideas: the Twentieth Century
- 11.316★ History and Methods of Art History
- 11.327★ Gothic Architecture and Monumental Sculpture
- 11.328★ Gothic Minor Arts
- 11.335★ Northern Renaissance Art
- 11.423★ Topics in Western Medieval Art
- 11.431★ Topics in Iconography
- 11.455★ Topics in Nineteenth-Century European Art
- 11.461★ Topics in Twentieth-Century Art
- 11.487★ Topics in Art Criticism

Music

- 30.100 Introduction to World Music
- 30.200★ Music in the Middle Ages
- 30.201★ Music in the Renaissance and Baroque Eras
- 30.202★ Music in the Classical and Romantic Eras
- 30.203★ Twentieth-Century Music to World War II
- 30.204★ Music Since World War II
- 30.340★ A History of Opera before 1800
- 30.341★ A History of Opera from 1800 to 1945
- 30.420★ - 30.424★ Special Topics

Religion

- 34.102★ Introduction to the Literature of the Hebrew Bible (Old Testament) and The History and Literature of Early Christianity
- or
- 34.107★ Christianity
- 34.108★ Introduction to Judaism and the Jewish People

- 34.122 Introduction to the Psychology of Religion
- 34.203★ Women in the Christian Tradition
- 34.230★ Mysticism
- 34.265★ Historic Figures in the Psychology of Religion
- 34.272★ Judaism and the Jewish People: Survival in Medieval Europe
- 34.273★ Judaism and the Jewish People: The Challenge of the Modern Age
- 34.303★ Paul Tillich and the Divine-Human Relation
- 34.305★ C.G. Jung and the Psychology of Religion
- 34.323 Religion and the State, Europe 1815-1965
- 34.378★ The Reformation Era in European History, 1409-1648
- 34.488★ Seminar in Modern Religious Thought and Culture

Sociology (53), Anthropology (54) or Sociology-Anthropology (56)

- 53.100 Introduction to Sociology or
- 54.100 Introduction to Anthropology
- 53.203 Introduction to Sociological Research
- 56.284★ Language and Culture
- 56.305 The Development of Sociological and Anthropological Thought
- 53.381★ Sociology of Law
- 53.403★ Workshop in Advanced Research Design
- 53.406 Contemporary Theoretical Sociology
- 56.460★ Studies in Applied Semiology

Or: 4.0 credits from one of the two disciplines listed under B. p. 293, in which the student is not taking 6.0 credits plus: 3.0 free options.

Related Courses

Students in one of the Pass or Honours programs in German language and literature should consider the possibility of taking related courses from among those listed above for German Studies.

Graduate Program

The Department of German offers studies leading to the degree of Master of Arts. For further details consult the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

German 22.115

Introductory German

A beginners' course designed to give a sound grasp of the fundamentals of present-day German. The facilities of the Language Learning Resource Centre and computer-assisted language instruction are available for both on-campus and off-campus use. Four hours a week.

German 22.118

Reading German

A course for beginners interested in the rapid acquisition of a reading knowledge of German. Grammar; use of dictionaries; basic vocabulary. Taught in English.

Four hours a week.

German 22.120 (2.0 credits)

Intensive Introductory German

An intensive course designed to enable students with little or no previous knowledge of German to reach in one year the level of proficiency normally attained over two years in German 22.115 and 22.205. The course thus provides a basis for majoring in German, but enrolment is not restricted to those intending to obtain a Pass or Honours degree in the German Department. Students not making satisfactory progress may transfer to the regular introductory course, German 22.115.

In conformity with the graduation requirements of the Department, in calculating the average grade of German courses for students in the programs of the German Department, the grade obtained in 22.120 will be given the weight of one course.

Prerequisite: Permission of the Department.

Eight hours a week.

German 22.205

Intermediate German A

Using a number of teaching methods, the course takes students from successful completion of the elementary course to a stage where they are able to use German in a variety of situations. The course emphasizes reading and writing but also includes oral work. Full concentration on speaking, however, occurs in German 22.209★. Students should register in that course after completion of German 22.205.

Prerequisite: German 22.115 or 22.118 or equivalent.

Four hours a week.

German 22.206

Intermediate German B

This course pursues objectives similar to those of German 22.205 and is designed for students who enter it with a higher-than-average standing on the elementary level, or with several years of high school or equivalent background. Grammar work and texts are appropriately adapted to this group, which is likely to include declared or prospective Majors.

Prerequisite: Standing of B+ or better in German 22.115 or equivalent.

Four hours a week.

German 22.209★

Spoken German

A course to develop increased proficiency in spoken German. Oral comprehension and systematic enlargement of vocabulary. Practice in the effective presentation of arguments and reports.

Prerequisite: German 22.120 or 22.205 or 22.206 or permission of the Department. (This course is not open to native speakers of German.)

Three hours a week plus laboratory assignments.

German 22.211★

Descriptive Analysis of Contemporary German Vocabulary

Patterns of German word formation and their interaction with syntactic structures. Analysis of text samples from various written sources; some practice in writing short essays in German.

Prerequisite: German 22.120 or 22.205 or 22.206, or permission of the Department.

Three hours a week.

German 22.213 (previously 22.210★ and 22.212★)

Written German: Analysis and Practice

A course parallel to German 22.209★ and emphasizing effective communication in written German. Explication of grammatical patterns and sentence structure in the light of current linguistic theory. Text analyses and practice in structured writing.

Prerequisite: German 22.120 or 22.205 or 22.206, or permission of the Department.

Three hours a week.

German 22.240

An Introduction to Literary Reading

An introduction both to representative works of German literature (to be read in German), and to the informed discussion of literary texts, including narrative fiction, poetry and drama.

Prerequisite: German 22.118 or 22.120 or 22.205 or 22.206, 22.213 or permission of the Department.

Three hours a week.

German 22.301★

Advanced Spoken German

Practice of oral comprehension and spoken German in discussions, short presentations and casual talks; based on material (films and texts) illustrating concerns of contemporary Germany.

Prerequisite: German 22.209★ or 22.210★, 22.213, or permission of the Department.

Three hours a week.

German 22.302★

Advanced Written German

The development of arguments and their effective presentation in texts expository and analytical, descriptive and narrative.

Prerequisite: German 22.210★, or 22.211★ or 22.212★, 22.213 or permission of the Department.

Three hours a week.

German 22.311★

Linguistic Text Analysis

Theory (structure, function and examples of written and spoken texts) and praxis of text analysis (representing fiction and non-fiction in modern German), production of written and spoken texts of various nonfictional types (*Gebrauchstexte*).

Prerequisite: German 22.211★ or 22.212★, 22.213 or permission of the Department.

German 22.312

Twentieth-Century German as a Literary Language

Narrative style from the viewpoint of discourse analysis with particular emphasis on gender aesthetics. Texts by authors such as Thomas Mann, Franz Kafka, Günter Grass, Ilse Aichinger, Christa Reinig, Christa Wolf.

Prerequisite: German 22.210★ or 22.211★ or 22.212★, 22.213 or permission of the Department.

German 22.348★

A Genre in German Literature

This course discusses in different years the development of one of the literary genres (poetry, drama, prose) within a specific time-frame.

Prerequisite: German 22.240 or permission of the Department.

Three hours a week.

German 22.350

German Literature of the Eighteenth Century

The literature of the Enlightenment, Storm and Stress, and Early Classicism, with special emphasis on the works of Lessing, Goethe and Schiller.

Prerequisite: German 22.240 or permission of the Department.

Three hours a week.

German 22.352★

Seminar on a Nineteenth-Century Topic

This course discusses, for example, an author, a genre, a theme.

Three hours a week.

German 22.380 (3080)

German Literature in the Twentieth Century

Representative texts from drama, poetry, and prose fiction in the period from Hauptmann to Grass.

Prerequisite: German 22.240 or permission of the Department.

German 22.402★

Translation

Practical exercises in translation and consideration of some theoretical approaches. In years when both German 22.402★ and 22.492★ are offered, the contents of the two courses will be co-ordinated.

Prerequisite: German 22.302★ or 22.311★ or permission of the Department.

Three hours a week.

German 22.403★

German Syntax

A systematic investigation of the principles of syntax in modern written German.

Also offered at the graduate level, with additional or different requirements, as German 22.584, for which additional credit is precluded.

Prerequisite: German 22.302★ or 22.311★ or 22.402★; or permission of the Department.

German 22.405

Formal German Speech (Die deutsche Rede)

A study of rhetorical and linguistic patterns in spoken (spontaneous and formal) German; analysis of German political and other genres of public speech from the nineteenth to the late twentieth century. Strate-

gies of group discussion, and formal oral presentations.

Precludes additional credit for German 22.401 ★ (no longer offered).

Prerequisite: German 22.301 ★, or 22.302 ★, or 22.312, or permission of the Department.

Three hours a week.

German 22.412

History of the German Language

Significant stages in the development of German: the evolution of its phonetic and grammatical structure, its vocabulary and stylistic norms. The social role of language of the twentieth century: language as a means of manipulation (Nazi Germany; advertising), divided German (FRG and GDR); socio-linguistic facets of contemporary literary language.

Prerequisite: 1.0 of German 22.211 ★, 22.312, 22.430 or permission of the Department.

German 22.430

Medieval Language and Literature

Introduction to Medieval German; Medieval narrative style in heroic epic poetry (*Nibelungenlied*) and early vernacular love poetry (*Minnesang*).

Also offered at the graduate level, with additional or different requirements, as German 22.563, for which additional credit is precluded.

Prerequisite: German 22.240 or permission of the Department.

German 22.440 ★

Early Modern German Literature

Selected readings from the Reformation and the Baroque.

Precludes additional credit for German 22.441 ★ and 22.442 ★ (no longer offered).

Prerequisites: German 22.240 and 1.0 credit (or equivalent) in German at the 300-level; or permission of the Department.

Seminar three hours a week.

German 22.454 ★

Seminar on a Topic from the Eighteenth Century

A detailed study of a movement, an author, a genre, etc.

Prerequisite: German 22.350 or permission of the Department.

Three hours a week.

German 22.469 ★

Selected Authors of the Nineteenth Century

A detailed study of works by specific authors such as Fontane or Keller or Kleist.

Prerequisite: German 22.240 or permission of the Department.

Three hours a week.

German 22.470

Seminar on a Literary or Linguistic Topic

Prerequisite: German 22.240 or permission of the Department.

German 22.471 ★

Seminar on a Selected Topic

Topic for 1996-97: The Literature of the Student Movement (1965-1975). An overview of the ideologies and ideals of the West German student movement (Studentenbewegung) as reflected in literary

writings of the period, considered within their social context. Texts in various genres by writers such as Rudi Dutschke, Hans Magnus Enzensberger, Hubert Fichte, Erich Fried, Rolf Hochhuth, Ulrike Meinhof, Peter Weiss, Renate Rasp and Peter-Paul Zahl.

Prerequisite: German 22.240 or permission of the Department.

Three hours a week.

German 22.472 ★

Literary Semiotics

Analysis of literary texts to discover the sign-systems through which literature communicates meaning. In different years the principal object of study will be the semiotics of either poetry or narrative prose or drama. Topic for 1996-97: Semiotics of poetry. Selected poems of the twentieth century.

Three hours a week.

German 22.483 ★

Language and Society in Twentieth-Century Germany

Language as a means of manipulation; divided German; socio-linguistic aspects of contemporary literary language. The course concentrates on one of these aspects. For specific information the student should consult the Department.

German 22.490 ★

Tutorial on a Selected Topic

A topic in German literature (an author or group of authors, a genre, a theme or period) or in the linguistics of German.

Prerequisite: Permission of the Department.

German 22.491

Tutorial

As above, but offered for full credit, with a corresponding enlargement of scope and assignments.

Prerequisite: Permission of the Department.

German 22.492 ★

Tutorial in Advanced Translation

Primarily for Honours students in their final year. In consultation with the Department, students complete a substantial translation project. Theoretical and institutional problems of translation are considered. In years when both German 22.402 ★ and 22.492 ★ are offered, the contents of the two courses will be co-ordinated.

Prerequisites: German 22.311 ★ and 22.402 ★ or permission of the Department.

German 22.498

Honours Essay (2.0 credits)

Open to candidates for Honours German and Honours German Studies in their Fourth year, with the permission of the Department. Minimum requirement for admission to the course: an average of A- in Third year in the two core disciplines for students in German Studies, or, for students in German, A- in German courses in Third year. Candidates for Honours German Studies are required to write an essay with an interdisciplinary topic. For all students the essay will be a substantial piece of work of approximately 16,000 words.

(Arts)

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Chair

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Supervisor of Graduate Studies

Duncan McDowall

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E.P. Fitzgerald

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M.W. Labarge

H.A. MacDougall

H.B. Neatby

R.F. Sarty

J.W. Strong

S. Whitney

Visiting Associate Professor

D. Dean

Programs of Study

Students intending to major in History, whether in the Pass, Honours, or Graduate program, should first consult with the appropriate adviser. Students considering an Honours program should note particularly the compulsory requirements not included in the Pass program. All majors in History should review their course of study annually with the appropriate adviser.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Pass Programs

Entrance and Continuation

Entry into History Pass programs requires enrolment in a 100-level History course, or an equivalent approved by the Department. Continuation requires completion of such a course with a C- or better average, and maintenance of a C- or better average over all other History courses successfully completed. History graduation averages will be calculated on the 6.0 best History credits for Pass and the 5.0 best for Combined Pass.

Neither History 24.490 nor 24.491 may be presented for graduation in a Pass degree program. Other 400-level credits may be presented with permission of the Department.

Pass Program in History

1. Students majoring in History are to take a minimum of 6.0 History credits as follows:

(a) 1.0 credit at the 100-level, to be taken in the First year; in exceptional circumstances a 200-level

course may be taken in its place;

(b) at least 2.0 credits at the 200-level, to be completed by the end of the Second year. A third 200-level credit is usually recommended;

(c) at least 2.0 credits at the 300-level, to be taken in the Third year. The Department may permit a third 300-level credit in lieu of a third 200-level credit.

2. The courses offered at the 100-, 200- and 300-levels generally fall into the following four fields:

(a) ancient, medieval and early modern Europe;

(b) modern Europe;

(c) North America;

(d) European expansion and the non-Western world.

Students in the Pass program in History are required to take at least 1.0 credit at the 100-, 200-, or 300-level in three of the four fields. History 24.388 may not be used to satisfy this field requirement.

Combined Pass Program

Pass programs combining History with another subject require at least 5.0 History credits, with at least 2.0 credits at the 200-level and at least 2.0 credits at the 300-level. Students in the Combined Pass program must take 1.0 credit in at least two of the four fields listed above under item 2. of the "Pass Program in History".

Honours Program in History

1. The Honours program requires 11.0 credits in History:

(a) 1.0 credit at the 100-level, to be taken as part of the First year; in exceptional circumstances a 200-level course may be taken in its place;

(b) 2.0 credits at the 200-level, to be taken in the Second year; History 24.288 is highly recommended for Honours students;

(c) 3.0 credits at the 300-level, to be taken in the Third year and to include History 24.388;

(d) 3.0 seminar credits at the 400-level to be taken in the Fourth year. Not more than two seminars may be taken in any one of the following fields:

(i) ancient, medieval and early modern Europe;

(ii) modern Western Europe;

(iii) Russia and Eastern Europe;

(iv) Great Britain and the Commonwealth;

(v) Canada;

(vi) United States;

(vii) European expansion and the non-Western world.

One of these seminar credits may, with departmental approval, be taken in a discipline other than History. Students choosing this option will be required to present only 10.0 History credits. A student may elect to present a research essay (History 24.499) in place of any two 400-level seminars;

(e) History 24.490 and History 24.491 to be taken in the Fourth or final year.

2. The courses offered at the 200- and 300-levels generally fall into the following four fields:

(a) ancient, medieval and early modern Europe;

(b) modern Europe;

(c) North America;

(d) European expansion and the non-Western world.

Honours students in their first three years are required to take at least 1.0 credit at the 200- or 300-level in three of the four fields. History 24.388 may not be used to satisfy this field requirement.

Students are required to show a proficient reading knowledge of French. This requirement may be satisfied by:

(a) the completion with a grade of C or better of French 20.106★ Reading French, or in any course offered by the Department of French numbered 20.130 or higher; or

(b) passing the Department of History's language examination.

Students with the permission of the Department, may substitute another language, if it is more appropriate to their program.

Honours students in good standing may revert to the B.A. Pass program at the end of the Third year. Students in the Fourth year may also do so, but may not present either History 24.490 or 24.491 for graduation in a Pass degree. Other 400-level credits may be presented with the permission of the Department. Students who have not taken History 24.388 in their Third year will require the permission of the Department to enter the Fourth year.

Combined Honours Programs

Students combining History with another subject will be expected to meet the language requirement of the Department (see foregoing, *Honours in History*), and to complete at least 6.0 credits in History. Only one of these 6.0 credits may be taken at the 100-level and at least 1.0 credit must be at the 300-level. In their first three years students are required to take 1.0 credit at the 200- or 300-level in at least two of the four fields listed above under item 2 of the *Honours Program*. The program must include 2.0 History credits at the 400-level, one of which may be 24.491. History 24.490 and 24.499 are not open to students in Combined Honours programs.

"Mention: français"

Students in the Pass or Honours program in History may qualify for the notation "Mention: français" by fulfilling the requirements outlined below. (See p. 81.) Those wishing to pursue this path should consult with the Department's "Mention: français" adviser. Approval of this adviser is required for all courses under the "Mention: français".

History courses presented in fulfilment of the "Mention: français" requirement can double as courses to satisfy History Pass or Honours requirements.

Students enrolling in courses at the University of Ottawa will do so through the University of Ottawa Exchange Program. To enrol in courses in French at another university, students must obtain a Letter of Permission. (See articles 3.12 and 3.13, p. 73.)

Pass or Combined Pass

To graduate with the notation "Mention: français" students must include in their program the following:

1. 1.0 credit in French language chosen in consultation with the Department of French for the purpose of perfecting the student's French language skills.
2. 1.0 credit from the following list of courses taught in French at Carleton or the University of Ottawa and concerned with the study of the heritage and culture of French Canada:
(Carleton) French 20.267★, 20.268★, 20.281★;
(University of Ottawa) Histoire HIS 2601, HIS 2701; Français FRA 2525, FRA 2526, FRA 2711, FRA 2714, FRA 2722, FRA 2727; Linguistique LIN 2502; Études Religieuses SRS 2530.
3. 1.0 credit in History at the 200-or 300-level taught in French at Carleton, at the University of Ottawa or at another university. At Carleton, History 24.390 and 24.391★ are available in French to meet this requirement.
4. Combined Pass students must meet the "Mention: français" requirements of both disciplines.

Honours and Combined Honours

To graduate with the notation "Mention: français" students must include in their program the following:

1. 1.0 credit in French language chosen in consultation with the Department of French for the purpose of perfecting the student's French language skills.
2. 1.0 credit from the following list of courses taught in French at Carleton or the University of Ottawa and relating to the French experience in Canada:
(Carleton) French 20.267★, 20.268★, 20.281★;
(University of Ottawa) Histoire HIS 2601, HIS 2701; Français FRA 2525, FRA 2526, FRA 2711, FRA 2714, FRA 2722, FRA 2727; Linguistique LIN 2502; Études Religieuses SRS 2530.
3. 1.0 credit in History at the 200-or 300-level taught in French at Carleton, at the University of Ottawa or at another university. At Carleton, History 24.390 and 24.391★ are available in French to meet this requirement.
4. Either History 24.498, or a 1.0 credit History seminar at the 400-level taught in French at the University of Ottawa. All written work must be submitted in French.
5. Combined Honours students must meet the "Mention: français" requirements of both Honours disciplines.
6. The language requirement associated with Honours or Combined Honours in History is waived for students enrolled in the "Mention: français."

Cross-Listed Courses

The Department of History cross-lists several courses offered by other departments (e.g., several Classical Civilization courses in the Department of Classics). No more than 2.0 credits in cross-listed courses may be included in the 6.0 credits required for the Pass program or the 5.0 credits required in Combined Pass programs. No more than 3.0 credits in cross-listed courses may be included in an Honours or Combined Honours program.

Prerequisites

Unless otherwise stated, the prerequisite for any 300-level course is:

1. A 200-level course, preferably in an appropriate field (for fields, see *Pass Program in History*, paragraph 2); or
2. Permission of the Department.

The prerequisite for any 400-level course is permission of the Department. Permission will normally be granted to students who have taken two 300-level History courses, with one course at either the 200- or 300-level in an appropriate field. Special students will be admitted to 400-level courses only under exceptional circumstances.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions* and *Class Schedule* booklet published in the summer.

History 24.101

History of Western Civilization

A survey of the major events, ideas and movements that have shaped western civilization from the fall of Rome to the twentieth century. Registration is restricted to First-year students, except for those students who need the course to satisfy the degree requirements of their department, faculty, or school. (Field a or b)
Three hours a week.

History 24.102

Europe in the Twentieth Century

An introduction to some of the major ideological, political, diplomatic, military, social, cultural and economic developments that have shaped contemporary Europe. This course is designed primarily for students who do not plan to major in history. Registration is restricted to First-year students, except for those students who need the course to satisfy the degree requirements of their department, faculty, or school. (Field b).
Three hours a week.

History 24.109

Turning Points in Modern History

Introductory seminars emphasizing the development of writing, research and analytical skills through the intensive examination of selected topics in modern history (e.g., the Italian Renaissance, the French Revolution, the impact of science, industrialization, the origins of the world wars). The numbers in each seminar will be kept small in order to provide an opportunity to work closely with individual faculty members.

Precludes additional credit for History 24.100 (no longer offered).

Registration is restricted to First-year students, except for those students who need the course to satisfy

the degree requirements of their department, faculty, or school.

Three hours a week.

History 24.130

Introduction to Canadian History

A historical study of the political, economic and social development of Canada with emphasis on the twentieth century.

Registration is restricted to First-year students, except for those students who need the course to satisfy the degree requirements of their department, faculty, or school. (Field c)

Three hours a week.

History 24.170

Europe and the Non-Western World

A study of European expansion overseas and of the range of local responses to Western pressures, with a view to explaining how this two-fold process shaped the historical development of Asia, Africa and Latin America.

Registration is restricted to First-year students, except for those students who need the course to satisfy the degree requirements of their department, faculty, or school. (Field d)

Three hours a week.

History 24.205

England During the Middle Ages

A study concentrating on the political development of medieval England, A.D. 410-1485. (Field a)

Three hours a week.

History 24.210

Introduction to the History of Ideas

A study of Western intellectual development which considers such movements as humanism, the Enlightenment, romanticism, Darwinism and contemporary ideologies. (Field a or b)

Three hours a week.

History 24.215

Renaissance Europe

The political and cultural history of Europe in the fourteenth, fifteenth and sixteenth centuries, with emphasis on the Italian Renaissance and its diffusion into England and France. (Field a)

Three hours a week.

History 24.221

History of Science

An introduction to the history of science from antiquity to the twentieth century. Readings include works by Plato, Aristotle, Grosseteste, Galileo, Newton, Darwin and Einstein. No special knowledge of modern science is assumed. (Field a)

Three hours a week.

History 24.222

The Industrial Revolution

A study of the economic and technological changes that transformed Western society during the nineteenth century. (Field b)

Three hours a week.

History 24.223

A History of Early Modern Europe, 1500-1789

A survey of the social, economic, cultural and political

development of Europe (including Scandinavian, Eastern and Mediterranean as well as Western and Central Europe) from the era of the Reformation to the outbreak of the French Revolution. Special attention is paid to social themes, such as family, sexuality and population, and to cultural aspects, including art, music and intellectual history. (Field a)

Three hours a week.

History 24.224

The Revolutionary Tradition in Europe, 1789-1900

Beginning with the French Revolution of 1789, the course includes such significant movements as romanticism, nationalism, the rise and implications of industrialism, and the development of socialist theory culminating in Marxism. (Field b)

Three hours a week.

History 24.233

Canadian Political History

A historical survey of the Canadian political tradition from the late eighteenth century to the present. Politicians, parties, ideas, social context and dissent are examined. (Field c)

Second-year standing recommended.

Three hours a week.

History 24.234

Canadian Social History

A historical survey of the structure and values of Canadian societies from the eighteenth to the twentieth centuries. Second-year standing recommended. (Field c)

Three hours a week.

History 24.235

Canadian Economic History

A historical survey of persistence and change in the Canadian economy from the eighteenth to the twentieth centuries. (Also listed as Economics 43.235.) (Field c)

Prerequisite: Economics 43.100 or permission of the Department of History.

Three hours a week.

History 24.236

The Spanish and English Colonies in North America

A comparative study of the development of the English North American colonies and New Spain (Mexico), with emphasis on settlement, social patterns and institutions, the frontier, native peoples and the emergence of a colonial sense of identity. (Field d)

Three hours a week.

History 24.237

The History of Latin America

A survey of the political, economic, and social development of Latin America from the colonial era to the twentieth century. (Field d)

Three hours a week.

History 24.240

History of the United States of America

A survey of United States politics and society since the American Revolution. (Field c)

Three hours a week.

History 24.250

Modern England, 1460-1918

A survey of significant political and social developments in England from the mid-fifteenth to the early twentieth century. (Field a or b)

Three hours a week.

History 24.254

Introduction to the History of Women

A survey of themes in the history of women with emphasis on their European experience, from the early modern period to the present. (Field b)

Three hours a week.

History 24.256

Comparative History of England and France

A comparison of political and social developments in two major Western European countries, from the seventeenth to the nineteenth century. (Field a or b)

Three hours a week.

History 24.259

A History of Germany

A history of the German-speaking peoples from the rise of the Holy Roman Empire to the present.

(Field a or b)

Three hours a week.

History 24.260

History of Russia and the U.S.S.R.

A survey of Russian history from rise of Kievan Rus to the collapse of the Soviet Union in 1991, with emphasis on the period from the reign of Peter the Great to the revolutions of 1917. (Field b)

Three hours a week.

History 24.272

The Rise of the International Economy, 1450 - 1914

A study of the worldwide network of trade, investment, and migration that was brought into being by Europe's commercial expansion overseas; how different world regions were incorporated into this network; and how this historical process influenced economic development in both core and peripheral areas of the emerging world economy. (A knowledge of economics is not a prerequisite.) (Field a, b, or d.)

Three hours a week.

History 24.275

History of Africa

An introduction to the history of Africa. The first half is devoted to the period prior to European colonization with emphasis on West African states and empires; the second half deals with resistance to colonization, European colonial rule, independence and liberation movements. (Field d)

Three hours a week.

History 24.278

The Middle East: 1798 to the Present

Offered in the Department of Religion as Religion 34.278. (Field d)

Three hours a week.

History 24.280

The Diplomatic History of Europe, 1815-1914

A survey of diplomatic history from the Congress of Vienna to the outbreak of the First World War.

(Field b)

Three hours a week.

History 24.281

War and Peace in the Modern World

A comparative survey of the social consequences of war for the major Western European states and Russia from Napoleon to Hitler, and the efforts of international organizations and governments to seek alternative ways to resolve international conflict. (Field b)

Three hours a week.

History 24.285

History of China

A survey of Chinese political and intellectual history from the Xia Dynasty to the 1911 Revolution. Emphasis is placed on the impact of the West on China from the sixteenth to the twentieth century. (Field d)

Three hours a week.

History 24.286

History of Japan

A survey of Japanese history from the legendary beginning of the country in 600 B.C. to the end of World War Two. (Field d)

Three hours a week.

History 24.288

The Historian's Craft

Lectures and workshops on historical methods and materials. Topics will include the discovery, evaluation, use and analysis of documents in historical context, non-documentary evidence, statistics, and bibliographical tools. Highly recommended for Honors students. Not open to First-year students.

Three hours a week.

History 24.290

History of Ancient Greece

Offered in the Department of Classics as Classical Civilization 13.290. (Field a)

Three hours a week.

History 24.291

History of Ancient Rome

Offered in the Department of Classics as Classical Civilization 13.291. (Field a)

Three hours a week.

History 24.302

The Later Roman Empire

A study of major developments-administrative, ecclesiastical, cultural and societal-of the later Roman Empire. (Also listed as Classical Civilization 13.302.) (Field a)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.303

History of the Byzantine Empire, 527-1453 A.D.

Offered in the Department of Classics as Classical Civilization 13.303. (Field a)

Three hours a week.

History 24.306★**Early Medieval Thought**

A general examination of medieval European intellectual life from the fifth to the twelfth century, with special reference to its setting in the monastery and the cathedral school. (Field a).

Precludes additional credit for History 24.305 (no longer offered).

Prerequisite: A 200-level History course.

Three hours a week.

History 24.307★**Later Medieval Thought**

A general examination of medieval European intellectual life in the thirteenth and fourteenth centuries, with special reference to its setting in the university. (Field a).

Precludes additional credit for History 24.305 (no longer offered).

Prerequisite: A 200-level History course.

Three hours a week.

History 24.309★**Studies in Greek History and Institutions**

The topic for 1996-97 is: Fifth Century Greece.

Offered in the Department of Classics as Classical Civilization 13.321★. (Field a)

Three hours a week.

History 24.311★**Studies in Roman History and Institutions**

The topic for 1996-97 is: The Age of Augustus.

Offered in the Department of Classics as Classical Civilization 13.322★. (Field a)

Three hours a week.

History 24.314★**Studies in Ancient History and Institutions**

Offered in the department of Classics as Classical Civilization 13.323★. (Field a)

Three hours a week.

History 24.317**The European Family**

A comparative study of the family in early modern and modern Europe. Themes to be examined include family and household forms; family economy and government; demography; law; marriage formation, stability and breakdown; gender and family relationships; sexuality. The family is considered in its own right and in terms of broader social, economic and political developments. (Field a or b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.318**France Under the Old Regime and Revolution**

A study of the main social, economic and political developments in eighteenth-century France, with particular emphasis on the origins and course of the Revolution up to 1799. Topics include social structure, authority and protest, religion and secularization, theory and practice of government, and economic change. (Field b)

Precludes additional credit for History 24.316 (no longer offered).

Prerequisite: A 200-level History course.

Three hours a week.

History 24.320**Freedom and Power in the Western World, 1840-1880**

An intensive study of the political and social crises that dominated the Western world in the mid-nineteenth century, with a view to explaining how their outcomes shaped the relationship between individual liberty, social identity, and national power in the major states. (Field b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.321**The Enlightenment**

An intellectual and cultural history of eighteenth-century Europe, with particular attention to Scotland, France and Italy. Representative themes include the shaping of historical knowledge, gender and sensibility; manners and private life; the literature of travel and ethnography, science and medicine. (Field b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.322★**Capital Cities in the Modern World**

An examination of capital cities from the early modern period to the present. Ottawa and the provincial capitals of Canada will be a particular focus. (Field c)

Prerequisite: A 200-level History course

Three hours a week.

History 24.323**Religion and the State, Europe 1815-1965**

A study of selected problems in modern religious history from the end of the French Revolution to Vatican Council II. Areas to be represented include the rise and decline of liberal Catholicism, the Oxford movement, Christian Socialism, Bismarck and the churches, the growth of anti-Semitism, Zionism, Vatican Council II. (Field b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.324**Colonial Frontier Societies**

An examination of four or five frontier societies in the eighteenth and nineteenth centuries, most of them Canadian, in which the presence of either European or North American metropolitan influences were critical to the character of development. (Field c or d)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.325★**History of Business in Canada: 1850-1980**

An examination of the place of business in Canadian society, economics and politics. The course covers both the internal dynamics of Canadian business (organization, strategy, the rise of the manager), and its external implications (competition, foreign investment, business-government relations). (Field c)

Precludes additional credit for Business 42.468★.

Prerequisite: A 200-level History course.

Three hours a week.

History 24.326★**Old Canada, 1740-1850s**

An examination of the processes of social formation and change in the St. Lawrence Valley in the critical

period of development from the height of French success in 1740 to the emergence of Montreal as a major metropole by the 1850s. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.327★

Introduction to Local History

An examination of the methods and approaches that characterize recent British, French and North American writing on local history. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.328★

Eastern Ontario Communities

The local history of Eastern Ontario, with particular reference to the settlement and development of the Ottawa Valley in the nineteenth century. (Field c)

Prerequisite: History 24.327★ or permission of the Department.

Three hours a week.

History 24.329★

Canadian Urban History

An introduction to urban growth and development in Canada. The course considers the historical basis of the urban pattern and its influence in Canada, and the internal structure and institutions of Canadian cities. In particular, Ottawa is used as a case study for classroom and research purposes. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.330★

The History of Upper Canada to 1867

An introduction to the economic, social and political development of Upper Canada to the time of Confederation. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.331★

Quebec Since the 1860s

A social, economic, cultural and intellectual history of Quebec with emphasis on the development of Quebec nationalism. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.332★

The Atlantic Provinces

Selected periods in the history of the four Atlantic Provinces. Themes covered include: settlement and population; economic trends; religious and cultural development; social and political evaluation. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.333★

The History of Ontario, 1867-1967

An introduction to the economic, social and political development of the Province of Ontario. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.334★

Canada-United States Relations

An examination of diplomatic, economic, cultural and

military relations, with particular attention to the twentieth century. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.335

History of Canadian Labour

A social, economic, political and cultural history of workers' responses to the evolving Canadian capitalist system, with emphasis on the twentieth century. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.336★

Canadian External Relations

The development of Canadian attitudes and policies toward external affairs, with emphasis on the twentieth century. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.337★

Development and Underdevelopment in Atlantic Canada, 1660-1960

Case-study analyses of the contrasts of development in different regions of all four Atlantic provinces from early colonial times to the modern period. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.339★

History of The Prairie West

An introduction to the economic, social and political evolution of the three prairie provinces from European penetration to the present. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.340★

History of Canadian Socialism since 1890

A history of the local, regional and national origins, evolution, schisms, vicissitudes of socialist practice and ideology in Canada in the twentieth century. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.341★

The American Revolution

A study of the causes and course of the movement leading to the independence of the United States. Particular emphasis is given to ideology, society, local issues and revolutionary organization. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.342★

Expansion, Sectionalism and Reform: The United States, 1819 to 1850

An examination of major developments in the United States from the Panic of 1819 to the Compromise of 1850, stressing the major social and political issues arising from territorial expansion, immigration and the reform impulse. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.344

The United States Since Pearl Harbour

Some principal themes in the history of the United States since 1941. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.346★

The History of African-American Women from Slavery to the Civil Rights Movement

An examination of aspects of the social, cultural, and political history of African-American women since the eighteenth century (Field c).

Prerequisite: A 200-level History course.

Three hours a week.

History 24.347★

Blacks in the United States

A study of blacks in the United States, which concentrates on their experience under slavery and the recurring themes of integration and separatism after emancipation. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.348

American Intellectual History

An examination of American thought from the colonial period to the twentieth century, with emphasis on political, social and religious ideas and their relation to American society and institutions. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.349

History of United States Foreign Policy Since 1865

A study of the United States as a world power in its international and domestic context. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.350★

Canadian Immigration and Settlement: 1760-1875

A study of immigration to and within British North America and of the adaptation of immigrants to colonial life between the Seven Years War and the early years of Confederation. (Field c).

Precludes additional credit for History 24.338★ (no longer offered).

Prerequisite: A 200-level History course.

Three hours a week.

History 24.351★

Selected Topics In Canadian History

A lecture course on a thematic area in Canadian history. The topic for 1996-97 is Canadian Military History. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.352★

Aboriginal Peoples of British North America to 1867

An introduction to the history of the aboriginal peoples of Canada, with particular emphasis on the cultural and economic impact of contact. The attitudes of Europeans to the natives of North America and the development of British Indian policy are considered.

(Field c or d)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.353★

The Aboriginal Peoples of Canada Since 1867

An examination of the history of aboriginal peoples in post-Confederation Canada, with particular emphasis on the development of Canadian Indian policy and the historical background to current issues regarding the Indian Act, land and treaty rights. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.354

Women and North American Society

An examination of the changes that have taken place in the position of women in North America and the relationship of these changes to other social, economic and intellectual developments. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.355★

History of British Columbia

An introduction to the economic, social, cultural, intellectual and political evolution of British Columbia with emphasis on the twentieth century. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.356★

Welfare and Poverty in Canadian History

An analysis of the development of the Canadian welfare state. It involves a chronological examination of welfare arrangements in Canada since the beginning of the nineteenth century, comparisons with selected western countries, together with discussions of the role of different social groups in policy formation: women, families, workers, bureaucrats, businessmen, churches, first nations. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.357★

Canadian Immigration and Settlement Since 1875

A study of immigration to Canada and of the adaptation of immigrants to their new environment from 1875. (Field c).

Precludes additional credit for History 24.338★ (no longer offered).

Prerequisite: A 200-level History course.

Three hours a week.

History 24.358

Society and Politics in England circa 1500-1914

An enquiry into the relationship between society and politics in England. (Field a or b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.359★

A History of the Habsburg Monarchy, 1526-1918

The rise and fall of the multi-national empire of the Habsburgs from the unification of Austria, Bohemia, and Hungary to the collapse of the empire in the First World War. (Field a or b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.360

History of the U.S.S.R.

A history of the politics, diplomacy, culture and society of Soviet Russia from 1917 to the end of the U.S.S.R. in 1991. (Field b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.362★

Image and Actuality in the History of the Modern Canadian Family

The transformations of family life in Canada since 1800, its varieties, its continuities, its relationship with political and economic institutions, and the changing status of its members. The construction of ideas about families will be discussed to underline the complex dynamic between images and practices. (Field c)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.363★

Themes in Modern European Women's History

An examination of themes in the social, cultural, and intellectual history of modern European women. (Field b).

Prerequisite: A 200-level History course.

Three hours a week.

History 24.364★

Selected Topics in European History

A lecture course on a thematic area in European history. (Field b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.365★

The Soviet Union in International Affairs

A study of Soviet diplomatic activity and foreign policy principles from the founding of Comintern in 1919 to the end of the U.S.S.R. in 1991. Attention is spread evenly over five units of study: Comintern and World Revolution (1919-28); Socialism in One Country (1929-43); Origins of the Cold War (1943-48); Global Concerns and Peaceful Co-existence (1948-64); Brezhnev and Gorbachev. (Field b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.366★

Modern East Central Europe

A study of the political and diplomatic history of East Central Europe since 1848 with emphasis on Poland and Czechoslovakia. (Field b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.371★

Selected Topics in International Economic History

A lecture course on a thematic area of international economic relations. The topic for 1996-97 is Multinational Corporations, State Power, and the International Struggle for Oil, 1920-1973. (Field b).

Prerequisite: A 200-level History course.

Lectures three hours a week.

History 24.373

North Africa and the Near East in the Era of Western Dominance

The political economy of Western expansion into Mediterranean Africa and Southwest Asia from medieval to modern times, with emphasis on commercial penetration, colonial domination, and the incorporation of the region into the world economy. (Field d).

Precludes additional credit for History 24.372★ (no longer offered).

Prerequisite: A 200-level History course.

Three hours a week.

History 24.374

History of Mexico

A survey of the historical forces which forged national identity from the Mexico to NAFTA. This course will examine political, social and economic structures to explain the particular sense of *mexicanidad* which characterizes the modern nation of Mexico. (Field d)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.375★

Women in Latin American History

A historical overview of the lives of women in Latin America from the pre-Hispanic period to the twentieth century. The particular role women have played in the resistance movements, in informal political structure, and in the economy will be emphasized. The experience of women in Mexico, Brazil, Argentina, and Peru will be highlighted. (Field d).

Prerequisite: A 200-level History course.

Three hours a week.

History 24.376★

Revolutions in Latin America

The context of revolutions and attempted revolutions as well as the question of resistance will be examined in a chronological framework. While exploring the revolutionary movements of the colonial and nineteenth-century periods, the course will focus on the twentieth century experience. (Field d).

Prerequisite: A 200-level History course.

Three hours a week.

History 24.378★

Reformation Europe

A history of the Protestant and Catholic Reformations of the sixteenth century, with special emphasis on the theological disputes of the protagonists and the impact of these disputes on the social, political and cultural developments of the era. (Also listed as Religion 34.378★). (Field a)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.380

International History, 1914-1956

A survey of international history in the First World War; peacemaking 1919-1923; inter-war diplomacy and the origins of the Second World War; the relations of the powers in the Second World War; and post-war relations and the Cold War. (Field b)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.384★**Selected Topics in Non-Western History**

A lecture course on a thematic area in non-Western history. (Field d)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.385★**Twentieth-Century China**

A political history of China from the 1911 Revolution to the present. Emphasis is placed on the development of Chinese communism and the Peoples Republic since 1949. (Field d)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.386★**Japan Since 1945**

A political, intellectual and economic history of Japan in the twentieth century, concentrating on the period since the end of the Pacific War. (Field d)

Prerequisite: A 200-level History course.

Three hours a week.

History 24.388**Historical Theory and Method**

An examination of questions concerning the nature and value of historical enquiry and the meaning of the course of history.

Prerequisite: A 200-level History course.

Three hours a week.

History 24.390**Etudes Dirigées**

Un programme de lectures choisies et de travaux écrits dans le domaine de spécialisation d'un membre du département. Consultez le conseiller de Mention: français pour les sujets offerts.

For students of "Mention: français" only.

Permission of the "Mention: français" adviser required.

Precludes additional credit for History 24.391★.

History 24.391★**Etudes Dirigées**

Voir History 24.390 pour description.

Permission of the "Mention: français" adviser required.

Precludes additional credit for History 24.390.

History 24.402**Beginnings of Early Medieval Europe and the Near East**

A seminar on the transformation of the later Roman world into the politics of early Medieval Europe and the Near East. (Also listed as Classical Civilization 13.402.)

Also offered at the graduate level, with additional or different requirements, as History 24.502, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.405**Selected Problems in Medieval History**

A seminar on crime, criminal law, and society in medieval England.

Also offered at the graduate level, with additional or different requirements, as History 24.505, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.406**Medieval Intellectual History**

An examination of selected aspects of medieval intellectual history.

Also offered at the graduate level, with additional or different requirements, as History 24.506, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.407**Galileo and His Age**

An intensive examination of the scientific and polemical works of the Italian physicist and astronomer Galileo Galilei (1564-1642). His life and thought are explored in the context of his medieval predecessors and of sixteenth and early seventeenth-century science and philosophy in general. Special attention is given to the role of patronage, the Jesuits, biblical interpretation, and the circumstances that led to his trial and condemnation.

Also offered at the graduate level, with additional or different requirements, as History 24.507, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.412**Machiavelli and His Age**

An intensive examination of Machiavelli's political, historical, military, diplomatic, literary and personal writing. His life and thought are explored in the context of the political, intellectual, and social issues that confronted Italians in the late Renaissance. Representative topics include: ancient political thought, the Florentine historiographical tradition, the role of the Papacy in Italian politics, the influence of Venice.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.416**The French Revolution**

A seminar on selected problems in the history and interpretation of the French revolution, with particular reference to political culture and social issues in the period 1780-1800.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.417**Selected Topics in the History of Eighteenth- and Nineteenth-Century France**

A seminar on selected problems and issues related to the history and historiography of France in the early modern and modern period.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.421

Science and Technology in the Canadian Experience

An examination of the role and relationship of science and technology, including their social and engineering applications, in the Canadian historical experience. The course is conducted as a graduate seminar with modified requirements for Honours students. Precludes additional credit for History 24.536. Prerequisite: Permission of the Department. Three hours a week.

History 24.422

The Maritimes in Transition, 1870s to 1920s

A seminar on social and economic themes. The course is conducted as a graduate seminar with modified requirements for Honours students. Precludes additional credit for History 24.537. Prerequisite: Permission of the Department. Three hours a week.

History 24.424

Canadian Immigration and Ethnic History

An examination of immigration and ethnic history in a selected period between the eighteenth and the twentieth centuries. The course is conducted as a graduate seminar with modified requirements for Honours students. Precludes additional credit for History 24.530. Prerequisite: Permission of the Department. Three hours a week.

History 24.425

Selected Problems in the Political Economy of Canadian Labour

A study of selected aspects in the history of Canadian labour with emphasis on the dynamics of social, economic, technological, political and cultural change in twentieth-century Canada. The course is conducted as a graduate seminar with modified requirements for Honours students. Precludes additional credit for History 24.550. Prerequisite: Permission of the Department. Three hours a week.

History 24.426

Perspectives on State Formation in Canada

An exploration of selected problems of political history: the construction of official statistics, the language of governments, the invention of nationalisms, the making of political cultures, the autonomy of the state, the practices of bureaucrats, the political role of women, the encounter of the welfare state and families, the political economy of the state, communities and the state. Also offered at the graduate level, with additional or different requirements, as History 24.526, for which additional credit is precluded. Prerequisite: Permission of the Department. Three hours a week.

History 24.429

Selected Topics in Greek and Roman History

Intended for Honours students in Classics or History in their Third or Fourth year. The topic for 1996-97 is Alexander the Great. (Offered in the Department of Classics as Classical Civilization 13.429.) Three hours a week.

History 24.430

Colonial Society in British North America

A seminar involving a comparative examination of two or more of the British North American colonies. Prerequisite: Permission of the Department. Three hours a week.

History 24.431

Canada from Confederation to the Great War

A seminar examining political and social transformations of the nation-making phase of our history. Prerequisite: Permission of the Department. Three hours a week.

History 24.432

Acadian and Quebec Society before 1763

An examination of the main political and social developments in both communities, with attention being paid to the history of France during the same period. The course is conducted as a graduate seminar with modified requirements for Honours students. Precludes additional credit for History 24.539. Prerequisite: Permission of the Department. Three hours a week.

History 24.433

Selected Problems in Canadian Business History, 1850-1980

Combining extensive reading of the secondary literature with research in primary collections in the Ottawa area, this seminar focuses on central themes of business development in Canada since 1850. Prerequisite: Permission of the Department. Three hours a week.

History 24.434

History of Northern Canada

A seminar on the regional history of the Canadian north, including both the provincial and the territorial norths. Topics include native peoples, culture contact, the fur trade economy, and resource frontier development. Canadian attitudes toward the north and the concept of Canada as a "northern nation" are also examined.

Also offered at the graduate level, with additional or different requirements, as History 24.529, for which additional credit is precluded.

Prerequisite: Permission of the department.

Three hours a week.

History 24.435

Elites and Elite Formation in Canadian Society, 1800-1925

A historical examination of the critical role of elites in the economies of selected Canadian regions in the nineteenth and early part of the twentieth centuries. Prerequisite: Permission of the Department. Three hours a week.

History 24.437

Canada from War to War

A seminar on the contours of Canadian development through the crises of war, reconstruction and depression. Prerequisite: Permission of the Department. Three hours a week.

History 24.438**Studies in the History of Popular Culture**

Selected studies in the social history of culture in the age of mass society, including the popular arts, and the "culture of consumption".

Prerequisite: Permission of the Department.

Three hours a week.

History 24.439**Modern Canada Since 1939**

Selected aspects of Canadian industrialization, urbanization, unionization, federalism, regionalism, feminism, nationalist ideologies, popular culture, and class and intellectual development.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.440**A Selected Period in United States History**

A seminar that considers the relationship among the political, social, economic and intellectual aspects of one of the following periods: (a) The American Revolution; (b) the early modern period, 1783-1816; (c) the Jacksonian era, 1819-1850; (d) the progressive era, 1896-1912; (e) the interwar years, 1920-1941; (f) since 1941. For 1996-97 the period will be (f).

Prerequisite: Permission of the Department.

Three hours a week.

History 24.443**The Religious Factor in the History of the United States**

A study of the role played by religious faith in the history of the United States, with special emphasis on political activities, the public philosophy, public policy and the American concept of national destiny.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.452**Gender and the Culture of Protestantism**

A seminar on Protestant women's religious expression and experience from the seventeenth through the nineteenth centuries in the British and transatlantic contexts. This course will explore how gender relations shaped women's piety and religious sensibility and the opportunities and restrictions created by religious institutions with particular attention to how class and racial differences among women informed religious life.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.453**Problems in the Intellectual History of Britain, 1740-1850**

A seminar on selected themes in the intellectual and cultural history of Britain, with special attention to the development of ideas of history and society. Representative topics include: the Scottish Enlightenment, the periodical press, the impact of the French Revolution.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.454**Selected Problems in the History of Women and the Family: the Pre-Industrial Atlantic World**

A seminar on selected problems relating to the pat-

tern of women's lives from the mid-sixteenth to the early eighteenth century. The course is concerned with one or more of the following issues: the changing nature of the family, women's changing work patterns, the place of women in the changing political scene, changing attitudes to childhood, changing attitudes to sexuality, the experience of trans-Atlantic migration for women and children. While the major focus is on Britain and France, Quebec and Acadia; the experiences of Amerindian women, especially Micmac, are usually considered.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.455**Selected Problems in Modern German History**

A seminar on selected problems relating to the political, social, economic, cultural, and intellectual developments of German-speaking central Europe in the modern era with emphasis on the Third Reich.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.456**Selected Themes in the History of Central Europe**

A seminar on selected problems relating to the history of the Habsburg Monarchy and its successor states (especially Austria, the Czech Republic, Hungary, Slovakia, Slovenia and Croatia, but also with attention to relevant parts of Italy, Poland, Ukraine and Romania) from the late Middle Ages to the present. The course will focus on the cultural identity of central Europe, and in particular on the problems of cultural integration in a multicultural society with emphasis on its centripetal and centrifugal elements.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.457**Selected Problems in Tudor History**

A seminar designed to examine recent historical approaches to the problems of power and community in Tudor England in the light of some current social-philosophical theories of politics and society.

Also offered at the graduate level, with additional or different requirements, as History 24.557, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.458**Selected Problems in Nineteenth- and Twentieth-Century British Social History**

A seminar primarily concerned with themes in social history.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.459**Selected Problems in the History of Women and the Family: from the Industrial Revolution**

A seminar on selected problems relating to the changes in women's lives and in the structure of the family that have occurred since the eighteenth century. The course is concerned with one or more of the following issues: women's changing work patterns; the rise of the women's movement; changing attitudes toward childhood; changing views of sexuality. While the main focus is on Britain, North American

and European experience is also examined, for comparative purposes.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.460

Selected Problems in Russian History

A seminar on selected problems relating to late Imperial Russia.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.461

Selected Problems in Soviet History

A seminar on selected problems relating to the establishment and subsequent course of the Soviet Union.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.471

Selected Problems in International Economic History

A seminar concerned with the political economy of international economic relations and their influence on patterns of historical development. The topic for 1996-97 is: Oil, War and National Security, 1914-1956.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.476

Selected Problems in Latin American History

A seminar on the institutions, ideologies, and social structures which influenced the creation of national identities in Latin America.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.480

Selected Problems in the Diplomacy of the Great Powers, 1906-1945

A seminar on selected problems in diplomatic history from the origins of the First World War.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.485

Selected Problems in East-Asian History

A seminar on a selected topic in Chinese or Japanese history during the nineteenth and twentieth centuries.

Prerequisite: Permission of the Department.

Three hours a week.

History 24.490

Honours Comprehensive

A written examination, required of candidates for Honours in History and taken in the Fourth or final year. The examination deals with general questions of historical interpretation arising from the Fourth-year seminars and History 24.491. It is offered only once a year at the end of the winter term.

History 24.491

Directed Studies

A course required of candidates for Honours in History which is taken in the Fourth or final year. It includes supervised reading and written reports in an area of history.

History 24.498

Mémoire de recherche

Un travail écrit dans le domaine de spécialisation d'un membre du département. Consultez le conseiller de "Mention: français" pour les sujets offerts.

For students of "Mention: français" only.

Permission of the "Mention: français" adviser required.

Precludes additional credit for History 24.499.

History 24.499 (2.0 credits)

Honours Research Essay

Open to candidates for Honours in History in their Fourth year with the permission of the Department. B+ standing in History courses is expected. The subject for research is settled in consultation with the Department and a supervisor is assigned. A written outline of the project must be submitted to the Honours Committee one week before the last day for course changes. The candidate will be orally examined upon the essay after presentation. This course carries double credit. It is not available to students in a Combined Honours program.

Precludes additional credit for History 24.498.

(Arts)

Location: To be announced
Telephone: 520-2809

Academic Administration

Director
To be announced

General Information

This program offers a challenging inter-disciplinary study of the humanities. At the heart of the Bachelor of Humanities is a core curriculum whose purpose is to provide students with a comprehensive, challenging, and common educational experience that is focused on humanity's record of outstanding achievement. The program's unique features include core seminars in which all members of the College participate, a number of designated courses across a range of disciplines, the choice of five concentrations (Liberal Arts, History, Philosophy, English Literature, and Languages) as well as a collegial atmosphere to supplement formal course work. Graduates of the program will receive the degree of Bachelor of Humanities (Honours). They will have acquired a rigorous education in the liberal arts and an understanding of important cultural and political accomplishments of the past. They will have developed well-honed skills of thoughtful reflection, conversation, written composition, and informed criticism, as well as significant proficiency in another language.

The College offers a four-year (Honours) program, consisting of 20.0 credits. Students will participate in a common academic enterprise by being members of a core seminar in each of their four years. These core seminars are central to the coherence of the curriculum and to the purposes of the program. In addition, the curriculum is based on a number of designated courses permitting an introduction to key events, texts, works, and commentaries in philosophy, literature, history, art and music, science, classical civilization, anthropology, religion, politics, and economics.

Honours Program

The College of the Humanities offers a carefully coordinated four-year program in the liberal arts, leading to the degree of Bachelor of Humanities (Honours). The degree program comprises four Humanities Seminars and courses in Philosophy, English Literature, History, Languages, and related disciplines.

Program Requirements

The Bachelor of Humanities degree requires presentation of 20.0 credits and satisfactory performance in the Fourth-year oral examination.

Courses are taken in one of five concentrations: Liberal Arts, Philosophy, English Literature, History, or a language and literature other than English. Four Humanities Seminars (Humanities 02.100, Humanities 02.200, Humanities 02.300, and Humanities 02.400) are common to all five concentrations. In addition, students must successfully complete a Second-year language credit specified by the College in consultation with the appropriate department, a specified Second- or Third- year literature credit in a language other than English, and a sight translation of a passage during the Fourth-year oral examination.

An oral examination, required of candidates for the Bachelor of Humanities, is taken in the Fourth or final year. Candidates will choose 12 primary and 12 important secondary texts on which to be examined, from a list provided them in their first year. They will also be required to make an oral sight translation of a passage from a language other than English. The examination is offered once a year at the end of the Winter term.

The Humanities Seminars

The Humanities Seminars constitute a four-stage program of study that leads students from a consideration of fundamental elements of human consciousness (Humanities 02.100) into a sequential examination of important themes in the major epochs in western civilization: Antiquity to the Middle Ages (Humanities 02.200), Renaissance to Enlightenment (Humanities 02.300), Napoleonic Empire to the Present (Humanities 02.400). The seminars are defined under the categories "Myth and Symbol," "Reason and Revelation," "Culture and Imagination," "Science, Language, and Power." Disciplinary perspective and thematic emphasis shift from one seminar to another. Humanities 02.100 concentrates primarily on religion and mythology, Humanities 02.200 on philosophy, Humanities 02.300 on literature and the fine arts, and Humanities 02.400 on history. Each seminar consists of two hours of lectures and two hours of tutorials each week and entails study of a select number of primary texts (for example, Homer's *Iliad* and *Odyssey*, Plato's *Republic*, St. Augustine's *City of God*, the *Koran*, Dante's *Divine Comedy*, Titian's *Bacchus and Ariadne*, Shakespeare's *King Lear*, Mozart's *The Magic Flute*, Rousseau's *Emile*, Beethoven's *Eroica Symphony*, Mary Wollstonecraft's *A Vindication of the Rights of Woman*, Marx's *Communist Manifesto*, Thomas Mann's *Doktor Faustus*, Margaret Laurence's *The Diviners*) and an examination of important secondary commentaries (such as George Grant's *Lament for a Nation*, Harold Innis's *Empire and Communications*).

Program Concentrations

Upon entering the program, candidates for the Bachelor of Humanities degree choose one of five concentrations of courses as their program of study.

The Liberal Arts Concentration (Concentration One) is designed for students who wish to receive a comprehensive education in the humanities. The Liberal Arts Concentration comprises the Humanities Seminars and 16.0 additional prescribed credits. In the Second, Third, and Fourth years, students will choose a stream (philosophy, English literature, his-

tory, or language) and will have the choice of electives within that stream. Normally, students will remain within the stream chosen upon entering the Second year.

The remaining four concentrations are designed for students who wish to receive a balanced background in the humanities with a higher degree of specialization in one discipline. These four concentrations, in most cases satisfying the requirements for a combined Honours degree in the chosen discipline, will prepare students for admission to graduate studies in that discipline.

Admission Requirements

Admission to the program is by demonstrated scholarly achievement and potential. In addition to applying to Carleton University through the Ontario Universities Application Centre, prospective students must submit a portfolio consisting of **a)** a one-page statement of why they wish to enter the program, **b)** a 750-word essay based on reflections on the theme or book chosen each year by the College, and **c)** a sample of a marked written exercise. The portfolio should be submitted to the College of Humanities, Carleton University by April 1. The final decision concerning acceptance normally takes place after an interview with a representative of the College. Students wishing to enter the program normally must have the OSSD, or the equivalent, including six OACs (or their equivalent), with an overall average of 80 percent or better. Since program enrolment is limited, satisfying the minimum admission requirements does not guarantee admission to the program. At the discretion of the College's Committee on Admissions, students who do not meet the 80 percent average may nonetheless be admitted to the program if their portfolio and interview are deemed outstanding.

Advanced Standing and Transfer of Credits

Applications for admission with advanced standing to the program leading to the Bachelor of Humanities degree will be evaluated individually. Advanced standing will be granted only for those courses that are determined to be appropriate for the Bachelor of Humanities program. On admission to the Bachelor of Humanities program, students will not receive credit for courses graded below C-.

Academic Standing and Continuation in the Program

Students are considered to be in good standing if they meet the following criteria:

1. A CI of 6.00;
2. a cumulative GPA of 8.0;
3. a grade of B- or better in each of the Humanities Seminars;
4. no grade of D, F, FNS, or Abs in more than 1.0 credit per calendar year.

Calculation of the cumulative GPA is based on all successfully completed courses from all academic

years in which the student has been registered in the Bachelor of Humanities program. In the case of repeated courses, the most recent grade will be used to compute the GPA.

Graduation Requirements

In order to fulfil the minimum graduation requirements for the degree of Bachelor of Humanities, a candidate must have met all the program requirements for the First to Fourth years, inclusive, with a cumulative GPA of 8.0 or better. In addition, the candidate must have achieved a grade of *Sat* in the Fourth-year oral examination.

In order to graduate, students must fulfil all University graduation regulations (see p. 52) in addition to all program regulations.

Program Concentrations

There are five concentrations available within the Humanities program.

Option One: Liberal Arts Concentration

First Year: Myth and Symbol

Humanities 02.100 Myth and Symbol
 Classical Civilization 13.200 Classical Mythology
 Language Requirement: Greek 15.201, or Latin 16.201, or French 20.150, or German 22.205, or Italian 26.200, or Religion 34.215, or Russian 36.202, or Spanish 38.203
 Religion 34.125 Interpretations of Religion
 Anthropology 54.100 Introduction to Anthropology

Second Year: Reason and Revelation

Humanities 02.200 Philosophy: Antiquity to the Middle Ages
 Classics 13.209 Greek and Roman Literary Genres or
 History 24.221 History of Science
 History 24.210 Introduction to the History of Ideas or
 Philosophy 32.205 Greek Philosophy or
 Political Science 47.230 History of Political Thought
 Religion 34.107★ Christianity
 Religion 34.108★ Introduction to Judaism and the Jewish People or
 Religion 34.109★ Introduction to Islam
 And 1.0 credit from the recommended P/L/L/H courses determined in consultation with the College Advisor

Third Year: Culture and Imagination

Humanities 02.300 Literature and the Arts: Renaissance to Enlightenment
 Humanities 02.310 Art, Music, Architecture: Renaissance to Romanticism

Option One: Liberal Arts Concentration

Year One	Year Two	Year Three	Year Four
Humanities 02.100	Humanities 02.200	Humanities 02.300	Humanities 02.400
Classics 13.200	Classical Civilization 13.209 or History 24.221	Humanities 02.310	Humanities 02.410
Language Requirement	History 24.210 or Philosophy 32.205 or Political Science 47.230	1.0 Literature Credit Classical Civilization 13.312 or 13.315 or two of 13.371 ★, 13.372 ★, and 13.373 ★; or French 20.262 ★ and one of 20.263 ★, 20.264 ★, 20.265 ★; or German 22.350; or Italian 26.250; or Russian 36.360 ★ and 36.361 ★; or Spanish 38.320 ★ and 38.321 ★	History Credit (TBA)
Religion 34.125	Religion 34.107 ★ and 34.108 ★ or 34.109 ★	English 18.230	Philosophy 32.280 or Philosophy 32.305 or Philosophy 32.306 ★ and 32.402 ★
Anthropology 54.100	P/L/L/H credit*	P/L/L/H credit*	P/L/L/H credit*

*Refers to designated Philosophy, English Literature, Language, and History credits determined in consultation with the College Advisor.

1.0 Literature credit (Classical Civilization 13.312 or 13.315; or French 20.262 ★ and one of 20.263 ★, 20.264 ★, or 20.265 ★; or German 22.350; or Russian 36.360 ★ and 36.361 ★; or Spanish 38.320 ★ and 38.321 ★)

English 18.230 British Literature from the Renaissance to the Romantics

And 1.0 credit from the recommended P/L/L/H courses determined in consultation with the College Advisor.

Fourth Year: Science, Language and Power

Humanities 02.400 History: Napoleonic Empire to the Present

Humanities 02.410 Principles of Modern Science
History credit

Philosophy 32.280 Language and Communication
or

Philosophy 32.305 German Philosophy: Eighteenth and Nineteenth Centuries

or
Philosophy 32.306 ★ Kant to Hegel
and

Philosophy 32.402 ★ Philosophy of Social Science
And 1.0 credit from the recommended P/L/L/H courses determined in consultation with the College Advisor

Option Two: Philosophy Concentration**First Year: Myth and Symbol**

Humanities 02.100 Myth and Symbol

Classics 13.200 Classical Mythology
or

Religion 34.125 Interpretations of Religion

Language requirement: Greek 15.201, or Latin 16.201, or French 20.150, or German 22.205, or Italian 26.200, or Religion 34. 215, or Russian 36.202, or Spanish 38.203

Philosophy 32.160 History of Philosophy

Anthropology 54.100 Introduction to Anthropology

Second Year: Reason and Revelation

Humanities 02.200 Philosophy: Antiquity to the Middle Ages

Classical Civilization 13.209

or

History 24. 221 History of Science

History 24.210 Introduction to the History of Ideas

or

Philosophy 32.205 Greek Philosophy

or

Political Science 47.230 History of Political Philosophy

Philosophy 32.201 ★ Introduction to Symbolic Logic
and

Philosophy 32.286 ★ Art and Ideas: from Ancient Greece to the 20th Century

or
 Philosophy 32.205 Greek Philosophy
 or
 Philosophy 32.225 Reason and Revelation
 or
 Philosophy 32.260 Philosophy of Religion
 Religion 34.107★ Christianity
 Religion 34.108★ Introduction to Judaism and the Jewish People
 or
 Religion 34.109★ Introduction to Islam

Third Year: Culture and Imagination

Humanities 02.300 Literature and the Arts: Renaissance to Enlightenment
 Humanities 02.310 Art, Music, Architecture: Renaissance to Romanticism
 1.0 Literature credit (Classical Civilization 13.312 or 13.315, or English 18.230, or French 20.262★ and one of 20.263★, 20.264★, or 20.265★, or German 22.350, or Italian 26.250, or Russian 36.360★ and 36.361★, or Spanish 38.320★ and 38.321★
 Philosophy 32.215 Modern Philosophy 1600-1800
 Philosophy 32.340 Aesthetics

Fourth Year: Science, Language and Power

Humanities 02.400 History: Napoleonic Empire to the Present
 Humanities 02.410 Principles of Modern Science
 History credit
 or
 Philosophy 32.280 Language and Communication
 Philosophy 32.305 German Philosophy: Eighteenth and Nineteenth Centuries
 or
 Philosophy 32.306★ Kant to Hegel
 and
 Philosophy 32.402★ Philosophy of Social Science
 Political Science 47.435 Modern Political Theory
 or
 Political Science 47.436★ and 47.437★ Concepts of Community
 or, two of:
 Philosophy 32.401★ Philosophy of Language
 Philosophy 32.441★ Contemporary Moral/Political Philosophy
 Philosophy 32.451★ Philosophy and Theories of Mentality

Option Three: English Literature Concentration

First Year: Myth and Symbol

Humanities 02.100 Myth and Symbol
 Classical Civilization 13.200 Classical Mythology
 English 18.208 Myth and Symbol
 Language Requirement: Greek 15.201, or Latin 16.201, or French 20.150, or German 22.205, or Italian 26.200, or Religion 34.215, or Russian 36.202, or Spanish 38.203,
 Religion 34.125 Interpretations of Religion
 or
 Anthropology 54.100 Introduction to Anthropology

Second Year: Reason and Revelation

Humanities 02.200 Philosophy: Antiquity to the Middle Ages
 English 18.209 Greek and Latin Literary Genres
 English 18.322 Chaucer and the Literature of Medieval England
 History 24.210 Introduction to the History of Ideas
 or
 Philosophy 32.205 Greek Philosophy
 or
 Political Science 47.230 History of Political Thought
 Religion 34.107★ Introduction to Christianity
 Religion 34.108★ Introduction to Judaism
 or
 Religion 34.109★ Introduction to Islam
 Anthropology 54.100 Introduction to Anthropology

Third Year: Culture and Imagination

Humanities 02.300 Literature and the Arts: Renaissance to Enlightenment
 Humanities 02.310 (Art, Music, Architecture: Renaissance to Romanticism)
 1.0 Literature credit (Classical Civilization 13.312 or 13.315, or two of 13.371★, 13.372★ and 13.373★; or French 20.262★ and one of 20.263★, 20.264, or 20.265★; or German 22.350; or Italian 26.250; or Russian 36.360★ and 36.361★; or Spanish 38.320★ and 38.321★)
 English 18.230 British Literature from the Renaissance to the Romantics
 English 18.332 Renaissance Literature
 or
 English 18.334 Shakespeare
 or
 English 18.342 Eighteenth-Century Literature

Fourth Year: Science, Language and Power

Humanities 02.400 History: Napoleonic Empire to the Present
 Humanities 02.410 Principles of Modern Science
 English 18.348 Romanticism
 or
 English 18.351 Victorian Poetry
 or
 English 18.353 The Novel from Dickens to Conrad
 or
 English 18.361 Twentieth-Century Poetry
 or
 English 18.363 Twentieth-Century British Fiction
 or
 English 18.364 Modern Drama
 1.0 credit from:
 English 18.481★ Selected Topic in Canadian Poetry
 English 18.482 Studies in Canadian Ethnic Minority Literature
 English 18.483 Studies in the Literature of Quebec and English Canada
 English 18.486★ Studies in Canadian Literature I
 English 18.487★ Studies in Canadian Literature II
 English 18.488 Canadian Writing and the Literatures of the First Nations
 History credit
 or
 Philosophy 32.280 Language and Communication
 or
 Philosophy 32.305 German Philosophy
 or

Philosophy 32.306★ Kant to Hegel
and
Philosophy 38.402★ Philosophy of Social Science

Option Four: History Concentration

First Year: Myth and Symbol

Humanities 02.100 Myth and Symbol
Classical Civilization 13.200 Classical Mythology
or
Religion 34.125 Interpretations of Religion
Language Requirement: Greek 15.201, or Latin 16.201, or French 20.150, or German 22.205, or Italian 26.200, or Religion 34.215, or Russian 36.202, or Spanish 38.203
History 24.101 History of Western Civilization
Anthropology 54.100 Introduction to Anthropology

Second Year: Reason and Revelation

Humanities 02.200 Philosophy: Antiquity to the Middle Ages
Classical Civilization 13.209 Greek and Roman Literary Genres
or
History 24.221 History of Science
Classics 13.290 History of Ancient Greece
or
Classics 13.291 History of Ancient Rome
or
History 24.305 Medieval Thought
History 24.210 Introduction to the History of Ideas
or
Philosophy 32.205 Greek Philosophy
or
Political Science 47.230 History of Political Philosophy
Religion 34.107★ Christianity
Religion 34.108★ Introduction to Judaism
or
Religion 34.109★ Introduction to Islam

Third Year: Culture and Imagination

Humanities 02.300 Literature and the Arts: Renaissance to Enlightenment
Humanities 02.310 (Art, Music, Architecture: Renaissance to Romanticism)
1.0 Literature credit (Classical Civilization 13.312 or 13.315 or two of 13.371★, 13.372★ and 13.373★, or French 20.262★ and one of French 20.263★, 20.264★, 20.265★; or German 22.350; or Italian 26.250; or Russian 36.360★ and 36.361★; or Spanish 38.320★ and 38.321★)
English 18.230 British Literature from the Renaissance to the Romantics
History 24.215 Renaissance Europe
or
History 24.223 History of Early Modern Europe
or
History 24.378★ Reformation Europe
or
History 24.388 Historical Theory and Method
History 24.359★ A History of the Hapsburg Monarchy

Fourth Year: Science, Language and Power

Humanities 02.400 History: Napoleonic Empire to the Present
Humanities 02.410 Principles of Modern Science
or
Philosophy 32.280 Language and Communication
or
Philosophy 32.305 German Philosophy
or
Philosophy 32.306★ Kant to Hegel
and
Philosophy 32.402★ Philosophy of Social Science
History credit
2.0 History credits at the 400-level

Option Five: Language Concentration

French

First Year: Myth and Symbol

Humanities 02.100 Myth and Symbol
Classical Civilization 13.200 Classical Mythology
French 20.150 Advanced French (A)
or
French 20.152 Advanced French (B)
Religion 34.125 Interpretations of Religion
Anthropology 54.100 Introduction to Anthropology

Second Year: Reason and Revelation

Humanities 02.200 Antiquity to the Middle Ages
Classical Civilization 13.209 Greek and Roman Literary Genres
or
Religion 34.107★ Christianity
and
Religion 34.108★ Introduction to Judaism and the Jewish People
or
Religion 34.109★ Introduction to Islam
French 20.211 Techniques d'expression écrite et orale (A)
or
French 20.212 Techniques d'expression écrite et orale (B)
French 20.161 Introduction to Literature: French Texts from the Seventeenth to the Nineteenth Century
History 24.210 Introduction to the History of Ideas
or
History 24.221 History of Science
or
Philosophy 32.205 Greek Philosophy
or
Political Science 47.230 History of Political Thought

Third Year: Culture and Imagination

Humanities 02.300 Renaissance to Enlightenment
Humanities 02.310 (Art, Music, Architecture: Renaissance to Romanticism)
1.0 Literature credit (Classical Civilization 13.312 or 13.315; or German 22.350; or Italian 26.250; or Russian 36.360★ and 36.361★; or Spanish 38.320★ and 38.321★)

or
 English 18.230 British Literature from the Renaissance to the Romantics
 0.5 200-level French credit
 French 20.261★ La Littérature du Moyen Age
 French 20.361 La Poésie
 or
 French 20.362 Le Roman
 or
 French 20.363 Études littéraires
 or
 French 20.364 Le Théâtre

Fourth Year: Science, Language and Power

Humanities 02.400 Napoleonic Empire to the Present
 Humanities 02.410 Principles of Modern Science
 French 20.461 Littérature d'Idées(I)
 or, 1.0 credit of:
 French 20.463★ Littérature d'Idées(II)
 French 20.464★ Aspects de la littérature française (II)
 French 20.466★ Littérature et sciences humaines (II)
 French 20.467★ Méthodologie et littérature
 French 20.462 Littérature d'Idées (II)
 History credit
 or
 Philosophy 32.280 Language and Communication
 or
 Philosophy 32.305 German Philosophy
 or
 Philosophy 32.306★ Kant to Hegel
 and
 Philosophy 32.402★ Philosophy of the Social Sciences

German

First Year: Myth and Symbol

Humanities 02.100: Myth and Symbol
 Classical Civilization 13.200 Classical Mythology
 German 22.120 Intensive Introductory German
 or
 German 22.206 Intermediate German B
 or
 German 22.209★ and 22.211★ Spoken German/Descriptive Analysis of
 Contemporary German Vocabulary
 Anthropology 54.100 Introduction to Anthropology

Second Year: Reason and Revelation

Humanities 02.200 Philosophy: Antiquity to the Middle Ages
 Classical Civilization 13.209
 Greek and Roman Literary Genres
 or
 History 24.221 History of Science
 or
 History 24.259 History of Germany
 or
 Religion 34.107★ Christianity
 and
 Religion 34.108★ Introduction to Judaism and the Jewish People
 or
 Religion 34.109★ Introduction to Islam

German 22.213 Written German: Analysis and Practice
 German 22.240 An Introduction to Literary Reading
 History 24.210 Introduction to the History of Ideas
 or
 Philosophy 32.205 Greek Philosophy
 or
 Political Science 47.230 History of Political Thought

Third Year: Culture and Imagination

Humanities 02.300 Literature and the Arts: Renaissance to Enlightenment
 Humanities 02.310 Art, Music, Architecture: Renaissance to Romanticism
 1.0 Literature credit (Classical Civilization 13.312 or 13.315; or English 18.230; or French 20.262★ and one of 20.263★, 20.264★, or 20.265★; or Italian 26.250; or Russian 36.360★ and 36.361★; or Spanish 38.320★ and 38.321★)
 German 22.350 German Literature of the Eighteenth Century
 Philosophy 32.305 German Philosophy: Eighteenth and Nineteenth Centuries
 German Language Examination

Fourth Year: Science, Language and Power

Humanities 02.400 History: Napoleonic Empire to the Present
 Humanities 02.410 Principles of Modern Science
 German 22.312 Twentieth Century German as a Literary Language
 or
 German 22.348★ and 22.352★ A Genre in German Literature/ on a Nineteenth-Century Topic
 or
 German 22.380 German Literature in the 20th-Century
 1.0 German credit at the 400-level
 1.0 History credit
 or
 Philosophy 32.280 Language and Communication
 or
 Philosophy 32.305 German Philosophy: Eighteenth and Nineteenth Centuries
 or
 Philosophy 32.306★ Kant to Hegel
 and
 Philosophy 32.402★ Philosophy of Social Science

Italian

First Year: Myth and Symbol

Humanities 02.100: Myth and Symbol
 Classical Civilization 13.200 Classical Mythology
 Italian 26.180 Intensive Italian
 Anthropology 54.100 Introduction to Anthropology

Second Year: Reason and Revelation

Humanities 02.200 Philosophy: Antiquity to the Middle Ages
 Classical Civilization 13.209 Greek and Roman Literary Genres
 or
 History 24.221 History of Science

or
 Religion 34.107★ Christianity
 and
 Religion 34.108★ Introduction to Judaism and the Jewish People
 or
 Religion 34.109★ Introduction to Islam
 History 24.210 Introduction to the History of Ideas
 or
 Philosophy 32.205 Greek Philosophy
 or
 Political Science 47.230 History of Political Thought
 Italian 26.250 Introduction to the Study of Italian Literature
 Italian 26.300 Advanced Italian

Third Year: Culture and Imagination

Humanities 02.300 Literature and the Arts: Renaissance to Enlightenment
 Humanities 02.310 (Art, Music, Architecture: Renaissance to Romanticism)
 1.0 Literature Credit (Classical Civilization 13.312 or 13.315; or French 20.262★ and one of 20.263★, 20.264★, or 20.265★; or German 22.350; or Russian 36.360★ and 36.361★; or Spanish 38.320★ and 38.321★)
 or
 English 18.230 British Literature from the Renaissance to the Romantics
 Italian 26.350 Italian Literature: Periods, Movements, and Genres 1250-1650
 or
 Italian 26.352 Italian Literature: Periods, Movements and Genres (1650-1990)
 or
 Italian 26.354 Themes in Italian Literature
 Italian 26.380 Writing Workshop in Italian

Fourth Year: Science, Language and Power

Humanities 02.400 History: Napoleonic Empire to the Present
 Humanities 02.410 Principles of Modern Science
 1.0 History credit
 or
 Philosophy 32.280 Language and Communication
 or
 Philosophy 32.305 German Philosophy: Eighteenth and Nineteenth Centuries
 or
 Philosophy 32.306★ and 32.402★ Kant to Hegel/Philosophy of Social Science
 Italian 26.360 Themes and Issues in Italian Culture
 Italian 26.400 Italian Language: Special Topics
 or
 Italian 26.450 Italian Literature: Special Topics
 or
 Italian 26.460 Italian Culture: Interdisciplinary Perspectives
 or
 Italian 26.480 Translation

Spanish

First Year: Myth and Symbol

Humanities 02.100 Myth and Symbol
 Classical Civilization 13.200 Classical Mythology
 Spanish 38.120 Intensive Spanish
 Anthropology 54.100 Introduction to Anthropology

Second Year: Reason and Revelation

Humanities 02.200 Philosophy: Antiquity to the Middle Ages
 Classical Civilization 13.209 Greek and Roman Literary Genres
 or
 History 24.221 History of Science
 or
 Religion 34.107★ Christianity
 Religion 34.108★ Introduction to Judaism and the Jewish People
 or
 Religion 34.109★ Introduction to Islam
 History 24.210 Introduction to the History of Ideas
 or
 Philosophy 32.205 Greek Philosophy
 or
 Political Science 47.230 History of Political Thought
 Spanish 38.204 Intensive Intermediate Spanish
 Spanish 38.210★ and 38.211★ Spanish Civilization/Spanish-American Civilization

Third Year: Culture and Imagination

Humanities 02.300 Literature and the Arts: Renaissance to Enlightenment
 Humanities 02.310 (Art, Music, Architecture: Renaissance to Romanticism)
 1.0 Literature credit (Classical Civilization 13.312 or 13.315; or French 20.262★ and one of 20.263★, 20.264★, or 20.265★; or German 22.350; or Italian 26.250; or Russian 36.360★ and 36.361★)
 or
 English 18.230 British Literature from the Renaissance to the Romantics
 Spanish 38.320★ The Golden Age I
 and
 Spanish 38.321★ The Golden Age II
 or
 Spanish 38.350★ Spanish-American Literature, 1500-1888
 Spanish 38.420★ Cervantes
 and
 0.5 Spanish credit at the 400-level

Fourth Year: Science, Language and Power

Humanities 02.400 History: Napoleonic Empire to the Present
 Humanities 02.410 Principles of Modern Science
 1.0 History credit
 or
 Philosophy 32.305 German Philosophy: Eighteenth and Nineteenth Centuries
 or
 Philosophy 32.306★ and 32.402★ Kant to Hegel/Philosophy of Social Science
 or
 Philosophy 32.280 Language and Communication

Spanish 38.330★ Nineteenth Century Spanish Literature
and
Spanish 38.331★ Twentieth Century Spanish Literature
Spanish 38.430★ Modern Spanish Novel
and
Spanish 38.351★ Spanish-American Literature from Modernism to the Present
or
Spanish 38.435★ Modern Spanish Drama

Russian

First Year: Myth and Symbol

Humanities 02.100 Myth and Symbol
Classical Civilization 13.200 Classical Mythology
Russian 36.120 Intensive Russian
Anthropology 54.100 Introduction to Anthropology

Second Year: Reason and Revelation

Humanities 02.200 Philosophy: Antiquity to the Middle Ages
Classical Civilization 13.209 Greek and Roman Literary Genres
or
History 24.221 History of Science
or
Religion 34.107★ Christianity
Religion 34.108★ Introduction to Judaism and the Jewish People
or
Religion 34.109★ Introduction to Islam
History 24.210 Introduction to the History of Ideas
or
Philosophy 32.205 Greek Philosophy
or
Political Science 47.230 History of Political Thought
Russian 36.201★ and 36.205★ Spoken Russian/Written Russian
Russian 36.203 Russian Grammar

Third Year: Culture and Imagination

Humanities 02.300 Literature and the Arts: Renaissance to Enlightenment
Humanities 02.310 (Art, Music, Architecture: Renaissance to Romanticism)
1.0 Literature credit (Classical Civilization 13.312 or 13.315, or English 18.230 or French 20.262★ and one of 20.263★, 20.264★, or 20.265★, or German 22.350, or Italian 26.250, or Russian 36.360★ and 36.361★)
Russian 36.260 Russian Literature in English Translation
Russian 36.302 Advanced Russian

Fourth Year: Science, Language and Power

Humanities 02.400 History: Napoleonic Empire to the Present
Humanities 02.410 Principles of Modern Science
1.0 History credit
or
History 24.260 History of Russia
or

Philosophy 32.280 Language and Communication or
Philosophy 32.305 German Philosophy: Eighteenth and Nineteenth Centuries
or
Philosophy 32.306★ Kant to Hegel
and
Philosophy 32.402★ Philosophy of Social Science
Russian 36.301★ and 36.305★ Advanced Spoken Russian/Advanced Written Russian
Russian 36.407 Major Authors: Pushkin to Chekhov

Classical Languages and Civilization

First Year: Myth and Symbol

Humanities 02.100 Myth and Symbol
Classical Civilization 13.200 Classical Mythology
Religion 34.125 Interpretations of Religion
Anthropology 54.100 Introduction to Anthropology
Classical Language - Greek or Latin, in consultation with the Classics department

Second Year: Reason and Revelation

Humanities 02.200 Philosophy: Antiquity to the Middle Ages
Classical Civilization 13.209 Greek and Roman Literary Genres
History 24.210 Introduction to the History of Ideas
or
Philosophy 32.205 Greek Philosophy
or
Political Science 47.230 History of Political Thought
Religion 34.107★ Christianity
Religion 34.108★ Introduction to Judaism and the Jewish People
or
Religion 34.109★ Introduction to Islam
Classical Language - Greek or Latin, in consultation with the Classics department

Third Year: Culture and Imagination

Humanities 02.300 Literature and the Arts: Renaissance to Enlightenment
Humanities 02.310 (Art, Music, Architecture: Renaissance to Romanticism)
Classical Civilization 13.290 History of Ancient Greece
or
Classical Civilization 13.291 History of Ancient Rome
1.0 Literature credit (Classical Civilization 13.312 or 13.315; or English 18.230; or French 20.262★ and one of 20.263★, 20.264★, or 20.265★; or German 22.350; or Italian 26.250; or Russian 36.360★ and 36.361★; or Spanish 38.320★ and 38.321★)
Classical Language - Greek or Latin, in consultation with the Classics department

Fourth Year: Science, Language and Power

Humanities 02.400 History: Napoleonic Empire to the Present
Humanities 02.410 Principles of Modern Science
Classical Civilization 13.427 Selected Topics in Classical History and Literature
or

Classical Civilization 13.428 Selected Topics in Greek and Roman Literature
or
Classical Civilization 13.429 Selected Topics in Greek and Roman History
1.0 History credit
or
Philosophy 32.280 Language and Communication
or
Philosophy 32.305 German Philosophy
or
Philosophy 32.306★ and 32.402★ Kant to Hegel/
Philosophy of Social Science
Classical Language - Greek or Latin, in consultation with the Classics department

Courses

Not of all the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Humanities 02.100

Myth and Symbol

The role of the mythic and symbolic in human thought, imagination, and spirit. Using works that embody a range of disciplinary perspectives, attention is given to such fundamental themes as the sacred and the profane, epiphany, cosmogony, nature, symbols and icons, the Fall, and the sources of social differentiation. Primary sources are drawn from ancient Greek epic, Hebrew Scripture, and select aboriginal or non-Western texts.

Lectures two hours a week and tutorials two hours a week.

Humanities 02.200

Reason and Revelation: Antiquity to the Middle Ages

The emergence of philosophical and theological speculation in the Western world. Fundamental dualisms within the western experience are examined: reason and revelation, eternity and time, philosopher and citizen, public and private spheres. Attention is given to the emergence and expressions of classical rationalism, community and education, philosophy, rhetoric and sophistry, judgment, the psyche, and the nature, rise, and fall, of empires. Primary sources are drawn from Greek philosophy and drama, Roman epic and the philosophical essay, Muslim Scripture, patristic theology, medieval philosophy and literature. Prerequisites: Humanities 02.100 and good standing in the Bachelor of Humanities program.

Lectures two hours a week and tutorials two hours a week.

Humanities 02.300

Culture and Imagination: Renaissance to Enlightenment

The forms of cultural and imaginative expression - literature, music, sculpture, painting, and architecture. Attention is given to themes of nature and grace, human will and freedom, language, law, neo-Platonism and other forms of mysticism, as well as to the emergence of empiricism and modern rationalism,

birth of the social sciences, the creation and rationality of complex secular organizations (such as the corporation). Primary sources are drawn from Reformation theology; Renaissance poetry, prose and drama; the painting, sculpture and architecture of the Italian Renaissance; the music of the baroque and classical periods; and the prose and poetry of the French and German Enlightenment and Romantic Period.

Prerequisites: Humanities 02.200 and good standing in the Bachelor of Humanities program.

Lectures two hours a week and tutorials two hours a week.

Humanities 02.310

Art, Music, Architecture: Renaissance to Romanticism

An examination of the major artistic, musical, and architectural movements since the fifteenth century. Students will gain familiarity with the significant cultural works and monuments, as well as the theoretical understanding which guided their composition and construction.

Lectures two hours a week and discussion groups one hour a week.

Humanities 02.400

Science, Language, and Power: Napoleonic Empire to the Present

Politics, ideology, science and technology of Western modernity. Attention is given to the new forms of social authority and organization, the exercise of power in the nineteenth and twentieth centuries, as well as the emerging focus on language in the major scholarly disciplines. The course examines the dichotomies of society and nature, community and the individual, heredity and the environment, as well as the topics of revolution, ideology, the politics of recognition, the nation-state and nationalism, modern science and the social sciences, social class and social differentiation, nihilism, technology, totalitarianism, the authority of professional knowledge and development of a knowledge-based society. Primary sources are drawn from English romantic poetry, German philosophy, historiography, economics, sociology and psychoanalysis, marxism, the Russian novel, language philosophy, the literature, art, and philosophy of modernism and post-modernism in Canada and elsewhere.

Prerequisites: Humanities 02.300 and good standing in the Bachelor of Humanities program.

Lectures two hours a week and tutorials two hours a week.

Humanities 02.410

Principles of Modern Science

A detailed investigation through laboratory experimentation and theoretical inquiry of the major principles of modern science. Students will acquire an understanding of the significant issues confronted in modern biology, physics, and chemistry.

Lectures two hours a week, laboratories two hours a week, and discussion groups one hour a week.

3470 Mackenzie Building
Telephone: 520-5672

Academic Administration

Director
M. de Leeuw

Acting Director, Centre for Industrial Design Research
B. Bums

Teaching Staff

Professor Emeritus
W. Gilles

Professors
J. Giard
G. Kardos
B. Wozniak

Associate Professor
B. Bums

Assistant Professors
M. de Leeuw
L. Frankel

Adjunct Research Professor
T. Moore, *Bell Northern Research*

Sessional Lecturers
W. Gilles
J. Mahan

School Registrar
R.L. Fleming

General Information

Industrial design* is a creative activity, the aim of which is to determine the formal qualities of objects produced by industry. These formal qualities include the external features, but are principally those structural and functional relationships that convert a system to a coherent unit, both from the point of view of the producer and of the user.

Industrial design tends to embrace all aspects of human environment that are conditioned by industrial production. In the future, the traditional activity of design for growth may continue to be essential. It will be necessary, however, to develop a design activity that contributes to the regulating of growth processes, the conservation of resources and the protection of the environment.

*As defined by the International Council of Societies of Industrial Design.

Bachelor of Industrial Design Degree Program

In September 1973, Carleton University initiated the First year of a new four-year program leading to the Bachelor of Industrial Design degree.

The Bachelor of Industrial Design degree is awarded on successful completion of the four-year program of studies. The program is structured to meet the requirements of the developing profession of industrial design. This implies an education with a solid general background, enabling the designer to communicate with experts in other disciplines. It also implies development of expertise in designing for one or more specific sectors in the wide field of application of industrial design. The program of studies was initiated as a joint venture of the Faculty of Engineering and the School of Architecture.

Admission Requirements

First Year

The OSSD or the equivalent, including six OACs with an average of 65 percent or better. The six OACs must include courses in Physics, Chemistry, Algebra and Geometry, and Calculus. It is strongly recommended that all applicants also have an OAC in English.

In order to compete successfully for admission in this limited enrolment program, it is strongly recommended that the candidate present a portfolio of any kind of work that could demonstrate the applicant's creativity and aptitude for the study of industrial design. Candidates are normally expected to make arrangements for a personal interview at the School. Such an interview will give the School of Industrial Design a clearer idea of the seriousness of the candidate and afford the candidate an opportunity to see and learn actively about the program of the School of Industrial Design.

Advanced Standing and Transfer of Credits

Applications for admission with advanced standing to the Second or subsequent years of the program leading to the Bachelor of Industrial Design degree will be evaluated individually. Advanced standing for academic subjects completed at another university or college will be evaluated for equivalence to the program requirements of the School of Industrial Design. Transfer of credit for projects in such programs as industrial design, engineering design, architecture, etc., completed at another university or college may also be considered, provided the grade is satisfactory and the student shows evidence of aptitude for design studio work by the production of a portfolio of original drawings or photographs, etc., and as a result of an interview with a designated member of the faculty of the School of Industrial Design.

Graduates from degree programs at Carleton University in Architecture, Engineering, Science and Commerce who meet the admission requirements for the First year of the B.I.D. degree program, could expect to be able to complete the work for the B.I.D. degree

in three years if their first degree program includes, minimally:

- 85.100★ Introduction to Industrial Design
- 85.101★ Industrial Design Analysis
- 91.101★ Engineering Graphics
- 91.102★ Orientation to Engineering
- 43.100 Introduction to Economics
- 49.100 Introductory Psychology

Graduates from other degree programs will be evaluated individually.

Mature Applicants

Persons who lack the normal entrance requirements as published in this Calendar but who have been away from full-time studies for a minimum of two years and who are 21 years of age or over by December 31 of the year in which they wish to enrol, may receive consideration for admission to a degree program.

Selective Admission

It should be noted that the number of student spaces in the School of Industrial Design is limited. Because of this, it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission, therefore, will be on a selective basis with preference given to those candidates who show the highest promise of success in the course.

Readmission

Students who have been absent from the program for one Fall/Winter session are normally required to apply for readmission before registration. Exceptions will be made in the case of students holding either a Letter of Permission (p. 48) or written approval from the School of Industrial Design.

Former students who have forfeited their undergraduate status must request readmission by following the normal admission procedures, including the submission of an updated portfolio of work.

Course Requirements

First Year	Term	Lectures and Tutorials		Laboratory and Studio Work	
		Fall	Winter	Fall	Winter
	69.107★ Elementary Calculus I	4	—	—	—
	69.117★ Elementary Algebra	—	4	—	—
	43.100 Introduction to Economics	3	3	—	—
	75.105 Elementary University Physics	3	3	3	3
	85.100★ Introduction to Industrial Design	3	—	—	—
	85.101★ Industrial Design Analysis	—	3	—	—
	85.130★ Introductory Projects IA	2	—	4	—
	85.131★ Introductory Projects IB	—	2	—	4
	91.111★ Mechanics-Statics	—	3	—	3
	Introduction to Computing (Note a)	3	—	—	—
Hours per week		18	21	7	10

Note a

Must be one of Computer Science 95.100★, 95.101★, 95.103★ or 95.104★.

Second Year	Term	Lectures and Tutorials		Laboratory and Studio Work	
		Fall	Winter	Fall	Winter
	85.211★ Mass-Production Technology for Industrial Design A	3	—	3	—
	85.212★ Mass Production Technology for Industrial Design B	—	3	—	3
	85.221★ Form and Colour Fundamentals A	2	—	4	—
	85.222★ Form and Colour Fundamentals B	—	2	—	4
	85.231★ Projects IIA	2	—	4	—
	85.232★ Projects IIB	—	2	—	4
	49.100 Introductory Psychology	3	3	—	—
	Architecture, Engineering or Computer Science Electives (Note a)	3	3	3	3
	Electives	3	3	—	—
Hours per week		16	16	14	14

Note a

Total course value equivalent minimally to 1.0 credit.

Third Year		Lectures and Tutorials		Laboratory and Studio Work	
		Fall	Winter	Fall	Winter
42.224★	Basic Marketing	—	3	—	—
49.372★	Perception	3	—	—	—
85.330	Projects IIIA (Note a)	4	—	8	—
85.331	Projects IIIB (Note a)	—	4	—	8
85.352★	Contextual Nature of Products	—	3	—	—
85.360★	Anthropometrics and Ergonomics	3	—	—	—
85.361★	Anthropometrics & Ergonomics Workshop	—	3	—	3
Electives (Note b)		6	3	3	3
Hours per week		16	16	11	14

Note a

The project courses, although given in one term each, are counted as full courses with one credit each.

Note b

Total course value equivalent to 1.5 credits.

Fourth Year		Lectures and Tutorials		Laboratory and Studio Work	
		Fall	Winter	Fall	Winter
85.400★	Professional Practice in Industrial Design	—	3	—	—
85.401★	Industrial Design Seminar (Note a)	3	—	—	—
85.430	Major Projects (Note b)	2	2	10	10
85.431	Minor Projects A	2	2	4	4
85.432	Minor Projects B	2	2	4	4
85.440★	Industrial Practice Internship Field Reports	3	—	—	—
Elective (Note c)		—	3	—	—
Hours per week		12	12	18	18

Note a

Although the Industrial Design Seminar takes place in the Winter term, the preparatory work that students are required to do must be completed in the Fall term, and therefore requires registration in that term.

Note b

The Major Industrial Design Projects course has a value equivalent of 2.0 credits.

Note c

The elective must be chosen in consultation with the School on the following principles:

- (i) The elective chosen should serve to deepen the student's understanding of fields related to Industrial Design or disciplines that are relevant for industrial designers;
- (ii) The elective chosen should preferably be an advanced course;
- (iii) The elective chosen should preferably be related to the Industrial Design projects and provide basic and/or actual information for these projects.

Industrial Practice Internship

In order to provide the student with a realistic view of the possibilities and limitations of industry, and to establish and maintain good contacts and communication among the School of Industrial Design, the students and industry, the student in Industrial Design has to spend a period of time as an intern in industry.

These periods of industrial practice internship are to be taken prior to graduation. Students should find an internship on their own initiative and confirm its suitability with the faculty member involved.

If the industrial practice internship is not completed in time or if it is not proved successful, the student will

not be awarded the Bachelor of Industrial Design degree until the missing internship is completed and proof of satisfactory results is given.

During the industrial practice internship, a study of the relationship between industrial design and the technology, production process, or functional issues at hand will be undertaken. A report is to be submitted to the School, to be filed in the technical data facilities of the School of Industrial Design and made accessible to other students. See course Industrial Design 85.440★.

Industrial Design Projects

The Industrial Design projects in the First, Second, Third and Fourth years will represent either real or simulated situations to be developed to the stage of drawings, models, full-scale mock-ups or simulated finished products, as appropriate.

The design experience in Industrial Design projects synthesizes and integrates all the other course work and draws on the resources from those courses, including the disciplinary expertise of the staff. It should also attempt to explore and exploit knowledge available on campus and within institutions outside.

Industrial Design projects, even when they are research-oriented, will only be acknowledged when they are aiming at predetermined goals, which should be of a concrete nature, preferably objects to be made by industry.

The usual pattern of activities in the execution of an Industrial Design project is, in its simplest form, composed of three subsequent phases:

- (a) an analytical informative phase;
- (b) a creative or formative phase;
- (c) a descriptive or communicative phase.

Progress within this pattern of activities is made by feedback and feed-forward with intermediate evaluations. A project will not be considered complete if any of the three major phases has not been passed through, documented and evaluated.

The student will normally be required to keep a record of working hours spent on the project. This record must be available for inspection, and must be one of the documents submitted for examination.

The School of Industrial Design may conditionally approve an intended collaboration of students in the execution of Industrial Design projects provided that proper means of evaluation and examination are built into the project to ensure the identification of each student's contribution.

Industrial design projects will be reviewed or examined after each of the phases and on the planned and agreed deadlines. Students who do not meet the deadlines for submission of project work will be considered to have withdrawn from examination.

It should be noted that supplemental examination privileges will not be granted for First-, Second-, Third-, and Fourth-year Industrial Design project courses (85.130★, 85.131★, 85.231★, 85.232★, 85.330, 85.331, 85.430, 85.431, and 85.432). This regulation implies that students who obtained a grade of less than C- for such a course must repeat the course and attain a grade of C- or better in order to proceed in the program.

The execution of Industrial Design projects will require professional equipment for sketching, drawing, etc., which will not be provided by the School of Industrial Design. A list of recommended equipment is available from the instructors of each project course, where applicable.

The execution of Industrial Design projects will require materials for sketching, drawing, reproduction, model-making, etc. Moreover, travel costs may be involved. The level of total expenditure will vary considerably with the nature of the theme or subject of the project.

Resulting documents, sketches, drawings, models, etc. from Industrial Design projects must be retained by the student for a minimum period of two years after production. During this period, the student must have these results available in good condition for the School of Industrial Design for exhibition, display or publication purposes. During this time, the student will be required to advise the Director of the School, well in advance, about any transaction, exhibition, display or publication, that will involve these results.

Students are not allowed to use the results of Industrial Design projects for commercial purposes without written permission of the Director of the School of Industrial Design.

Fourth-Year Industrial Design Projects

All regulations and arrangements as described under "Industrial Design Projects" apply to the Fourth-year projects. Over and above these regulations, Fourth-year Industrial Design projects are subject to the following:

All Fourth-year students are required to undertake Industrial Design 85.430, Major Projects, 85.431, Minor Projects A, and 85.432, Minor Projects B in the same academic year.

Fourth-year Industrial Design projects are conducted, supervised, administered and examined by the Industrial Design Projects Committee, reporting to the Faculty Board of the School of Industrial Design.

The subjects or themes of Industrial Design projects in 85.430 are determined by agreement between the student and the Industrial Design Projects Committee. This agreement should be reached before the commencement of the Fall term in the Fourth year.

A student who chooses to do an Industrial Design project that is based on special techniques or technologies, is required to propose an expert in that special field to be present at the evaluations of the project to assist the Industrial Design Projects Committee.

Students registering in Fourth year, who have failed to reach an agreement with the Industrial Design Projects Committee before the commencement of the Fall term will normally be given a subject or theme by the Committee. All projects undertaken in 85.430 will be confirmed by contract with the instructor.

In order to reflect the actual situation of the professional industrial designer, the student is required to undertake more than one project to be executed simultaneously in Fourth year. The student is required to plan the work on the Fourth-year Industrial Design projects well in advance, in consultation with the Industrial Design Projects Committee.

The specified record of working hours spent on Fourth-year Industrial Design projects must be available for inspection by the Committee at any time and be among the documents to be submitted at the final examination.

General Information

Course Pattern

The program of study in Industrial Design is necessarily structured to meet the requirements in education and training for a professional career in industrial design.

For purposes of scheduling, each student is considered as being in a particular year of the program. In order to move through the program, a student must not be deficient in the Industrial Design project course(s) and in no more than one of the other courses. This requirement does not relate to a student's academic status, but only to the nominal year designation. However, a student who is taking courses in Fourth year while designated as being in Third year, has the responsibility for satisfactorily resolving any prerequisite deficiencies and difficulties in the course program.

Course Level

The year level of a course can be read from the first digit to the right of the decimal in the course number; for example, the course Industrial Design 85.331 is at Third-year level and 85.430 is at Fourth-year level. This indicates the general academic background required. Specific prerequisites are also given where appropriate. Students may take courses at a year level higher than their current registration; they are advised, however, to consult the course instructor if they have doubts regarding their background preparation. In some cases, the School of Industrial Design may also be able to waive specific prerequisites.

Electives

The School of Industrial Design offers elective courses under its own jurisdiction. It is strongly recommended, however, that students in Industrial Design also choose from the wide variety of courses in the humanities, social sciences, engineering or multi-disciplinary courses offered in the University. Industrial Design projects usually represent complex situations which require background information that often will be better understood when supported by appropriate elective courses in other disciplines.

Qualifying-University Year Courses

Qualifying-University year courses cannot be used to satisfy any of the elective requirements in any year of the regular course pattern.

Student Responsibility

The student is responsible for knowing the regulations of the School of Industrial Design and for complying with them. Any exceptions to the regulations must be approved in writing by the School of Industrial Design Student Standing and Promotion Committee.

Instructional Television

Instructional Television offers an alternative mode of access to courses offered at Carleton University. Your learning experience at Carleton University may include a mix of on-campus and television courses. For detailed information about *itv* refer to p. 67.

Carleton Industrial Design Students' Association

CIDSA organizes social and academic events to develop esprit de corps among Industrial Design students and faculty. The association also represents students within the School of Industrial Design regarding academic and/or policy matters to the University and the profession.

Grading System

Standing in courses will be determined by the School and will be shown by alphabetical grades. (see p. 50)

On supplemental examinations, the maximum grade obtainable for students in the B.I.D. program is *C-*.

Notations to represent special circumstances are as follows:

Aeg

Aegrotat standing is a pass standing granted despite absence from the final examinations. It may be granted by the Committee on Student Standing and Promotion of the School of Industrial Design only in response to a student's written request. Aegrotat standing will be granted only in exceptional circumstances and if the term work has been of high quality.

F

Failure: no academic credit.

FNS

Failure, but with supplemental privileges withdrawn because of unsatisfactory term work or an unacceptably low mark in the examination. No academic credit.

Wdn

Withdrawn in good standing: no academic credit.

Abs

Absent from formally scheduled final examinations where the necessary term work has been completed. No supplemental privileges. No academic credit.

Def

Students who are absent from final examinations or who are unable to complete their course work for medical or compassionate reasons may apply to the Committee on Student Standing and Promotion of the School of Industrial Design for deferred examination privileges. Such applications must:

1. be made in writing to the Engineering Faculty Registrar's Office not later than one week after the date of the examination; and

2. be fully supported in the case of illness by a medical certificate or by appropriate documents in other cases.

Academic Standing, Promotion and Probation

The academic standing of each student in the B.I.D. program will be reviewed prior to fall registration. At that time, the student's previous record, including courses from the preceding Summer session and supplemental examination results, will be considered.

GPA's and cumulative GPA's determine the academic standing of a student. They are calculated on the basis of course credits. Normally, a full (two-term) course has a value of 1.0 credit and a half (one-term) course, indicated by a ★ after the course number, has a value of 0.5 credit. In the B.I.D. program, the courses Industrial Design 85.330 and 85.331, although offered in one term, have a course value equivalent to 1.0 credit each. The course Industrial Design 85.430 has a course value equivalent to 2.0 credits.

The 12-grade point system is set out on p. 50. The grade points earned in any specific course are determined by multiplying the grade points corresponding to the grade by the credit value of the course. Thus an A+ in a half-credit course will earn the student 6.0 grade points, while an A+ in a two-credit course would be worth 24 grade points. GPA's are calculated by dividing the total accumulated grade points by the total credits.

To achieve satisfactory academic standing, the student must:

1. meet the GPA for the year of study just completed;
2. meet the cumulative GPA required for all courses taken as part of the Bachelor of Industrial Design program.

The required cumulative GPA and the GPA for the year are:

- 2.5 after one year of study;
- 2.8 after two years of study;
- 3.1 after three years of study;
- 3.4 after four years of study.

A year of study, as used here, refers to the student's period of study and not to the program year defined in the previous section of these regulations. A year's GPA is based on all courses taken during one Academic Year; calculation of the cumulative GPA is based on the courses from all Academic Years in which the student has been registered in Industrial Design. The most recent grade obtained in each course will be used to compute the GPA.

3. must have completed all course requirements of First and Second years to be eligible to proceed to Third-year project courses. Students must have completed all industrial design courses of third year to proceed to Fourth-year project courses.

4. not receive a grade of *F*, *FNS* or *Abs* in the year of study just completed in more courses than the allowable numbers listed below:

Number of Full Credit Equivalents Taken	Maximum Number of Full Credit Equivalent <i>F</i> , <i>FNS</i> or <i>Abs</i> Allowed
0.5—1.0	0
1.5—2.5	0.5
3.0—4.0	1.0
4.5—5.5	1.5
6.0 or more	2.0

5. achieve a GPA of 4.0 or better in each of the project courses.

After a review of grades, a student who no longer meets the requirements for satisfactory academic standing, will be placed on academic probation. A student may be on academic probation only once in the Bachelor of Industrial Design program.

A student on probation for reasons other than failure of a project course will not be allowed to register in any project courses.

A student on probation will be required to successfully complete the following courses from the previous year of registration:

1. any project course of the core program for which a grade less than C- was obtained;
2. any other core course that was failed.

Moreover, the student will be required to repeat or to replace any elective course of the previous year's registration that was failed.

A student on probation who fails to meet these conditions will lose undergraduate status and will be ineligible for future registration in the B.I.D. program.

Students with Advanced Standing

Students admitted with advanced standing must obtain an average appropriate to their level of admission but only those courses taken at Carleton University will be included in the evaluation.

Graduation

In order to fulfil the minimum graduation requirements for the degree of Bachelor of Industrial Design, a candidate must have met all the course requirements of the First to Fourth years, inclusive, with a cumulative GPA of 3.4 or better. In addition, the candidate must have achieved a GPA of 4.0 or better in each of the Industrial Design project courses and be recommended by the School of Industrial Design.

In order to graduate, students must fulfil all University graduation regulations in addition to all School regulations. (See p. 52.)

Degrees with Distinction

Upon recommendation of the School of Industrial Design, the notation "with High Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Industrial Design. To be considered for this recommendation, the candidate is expected to obtain a GPA of 10.0 or better in the

course requirements of the final year and, in addition, a GPA of 7.8 or better in the course requirements of the First to Fourth years, inclusive.

Upon recommendation of the School of Industrial Design, the notation "with Distinction" may be made on the academic records of a candidate for the degree of Bachelor of Industrial Design. To be considered for this recommendation, the candidate is expected to obtain a GPA of 9.0 or better in the course requirements of the final year and, in addition, a GPA of 6.6 or better in the course requirements of the First to Fourth years, inclusive.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Industrial Design 85.100★

Introduction to Industrial Design

An overview of the theoretical background of industrial design, consisting of such topics as: the definitions and dimensions of design and industrial design, its nature and its historical evolution; the notion of quality; quality aspects in man-made objects; formal qualities as determinants for categories of design; design methods; design management in industry; professional practice of industrial design and industrial design promotion, nationally and internationally. Practising industrial designers are invited to present case studies of their activities. (Also listed as Architecture 76.206★.)

Lectures and discussions three hours a week.

Industrial Design 85.101★

Industrial Design Analysis

The various problems involved in industrial design are analyzed. Among others: the relationship with principal techniques and mass-production technology; problems of uniformity and variety, specialty and versatility in production; problems of tolerances; the role of ergonomics and anthropometrics in design; industrial design and environment; speculations about future industrial design approaches with regard to pollution and conservation of resources; adaptation of value-analyses to the field of industrial design. (Also listed as Architecture 76.211★.)

Prerequisite: Industrial Design 85.100★ (Architecture 76.206★).

Lectures and discussions three hours a week.

Industrial Design 85.130★

Introductory Projects IA

An introduction to the techniques of industrial design, including drawing and sketching as an aid to design, ideation and visualization, product drawing, presentation techniques, laboratory equipment and practices, introduction to the design process.

Prerequisite: Industrial Design 85.100★ (may be taken concurrently).

Lectures and tutorials two hours a week, studio four hours a week.

Industrial Design 85.131★

Introductory Projects IB

This course deals with further notions of industrial design theory and practice, more specifically those dealing with the principles of product development; case studies. The emphasis is on creative problem solving techniques and the application of visual communication techniques in design, introduction to the fundamentals of photography.

Prerequisite: Industrial Design 85.130★.

Lectures and tutorials two hours a week, studio four hours a week.

Industrial Design 85.211★

Mass Production Technology for Industrial Design A

This course attempts to generalize the transformation techniques for manufacturing materials in modern industry. The course presents a survey of the various techniques applied to material in its liquid, plastic, or solid state of aggregation. Part design requirements and relative cost factors for each of the processes are emphasized. Finishing, decorative techniques, and the role of production tooling; properties, cost factors, and limitations.

Precludes additional credit for Industrial Design 85.210 (no longer offered).

Prerequisites: Industrial Design 85.100★, 85.130★.

Lecture and tutorials three hours a week, laboratory three hours a week.

Industrial Design 85.212★

Mass Production Technology for Industrial Design B

Similar to Industrial Design 85.211★, this course attempts to generalize the transformation techniques for manufacturing materials in modern industry. The course presents a survey of the various techniques applied to material in its liquid, plastic, or solid state of aggregation. Part design requirements and relative cost factors for each of the processes are emphasized. Finishing, decorative techniques, and the role of production tooling; properties, cost factors, and limitations.

Precludes additional credit for Industrial Design 85.210 (no longer offered).

Prerequisite: Industrial Design 85.211★ or permission of the School of Industrial Design.

Lecture and tutorials three hours a week, laboratory three hours a week.

Industrial Design 85.221★

Form and Colour Fundamentals A

The object of this course is to encourage the students to approach the phenomena of form and colour systematically. Known systems of form determination and colour identification are evaluated, as well as the basic elements of design such as: line, colour, value, space, texture, shape and form. Form and colour in nature are compared with form and colour in man-made environments.

Precludes additional credit for Industrial Design 85.220 (no longer offered).

Prerequisite: Industrial Design 85.101★.

Lectures and tutorials two hours a week, laboratory four hours a week.

Industrial Design 85.222★**Form and Colour Fundamentals B**

This course analyzes further the phenomena of form and colour in industrial design. Properties of structural elements of form and their interactions in ranges, proportions, static and dynamic symmetries in two- and three-dimensional compositions are studied. This includes the principles of design such as balance, unity, contrast, emphasis, pattern, movement and rhythm. Additional topics of the course are the appearance of form and colour under various conditions and in various positions, the expression of form and colour, typology of objects, form organization, form description and colour specification. Precludes additional credit for Industrial Design 85.220 (no longer offered).

Prerequisite: Industrial Design 85.221★.

Lectures and tutorials two hours a week, laboratory, four hours a week.

Industrial Design 85.231★**Projects IIA**

This course is an introduction to some of the basic design principles and their use in contemporary industrial design. Topics covered will include: basic design theory and practice, fundamental aspects of design methodology, problem solving techniques, visual communication techniques, basic modelling techniques. Case studies will be used throughout the course. The design project(s) will explore some or all of the design principles covered in the lectures.

Prerequisites: Industrial Design 85.101★, 85.130★, 85.131★ or permission of the School of Industrial Design.

Lectures two hours a week, studio four hours a week.

Industrial Design 85.232★**Projects IIB**

This course is an introduction to the design principles associated with adapting products to an existing product semantic. Topics to be covered include: product semantics, design analysis, design synthesis, design evaluation, modelling techniques. The design project(s) explore some or all of the design principles covered in the lectures.

Prerequisite: Industrial Design 85.231★ or permission of the School of Industrial Design.

Lectures two hours a week, studio four hours a week.

Industrial Design 85.312★**Graphics Technology and Design**

Survey of techniques and processes used in the printing and blockmaking industry and the relationship of these processes to graphic design. Typeface design and the development of type and families of typeface from historical sources. Typefaces as exponents of cultural trends. Basics underlying typography and layout in graphic design. Minor graphic design projects are executed in connection with the lectures.

Prerequisites: Industrial Design 85.221★ and 85.222★.

Lectures and tutorials three hours a week.

Industrial Design 85.313★**Package Engineering and Design**

Survey of processes and materials used in the packaging industry. Principles of package engineering and design for the transportation and distribution of mass-produced products. Packaging design as inte-

grated in marketing processes; product and brand identification; corporate identity through package design. Minor packaging design projects are executed in connection with the lectures.

Prerequisites: Third-year registration and Industrial Design 85.312★.

Lecture and tutorials three hours a week.

Industrial Design 85.314★**Exhibition Design**

The field of exhibition design is explored through lectures and case studies. Students undertake a preliminary exercise in display and exhibition design prior to the development and implementation of an exhibition; this normally involves the design of the School of Industrial Design's Annual Graduation Exhibition.

Prerequisite: Industrial Design 85.231★.

Lectures and tutorials three hours a week.

Industrial Design 85.321★**Product Communication and Evolution**

It is recognized that the objects of our environment, besides serving their primary usage, are most often used as a medium to communicate man's personal or collective ideas. The design of objects and environments can, to a great extent, be seen in this context, and this course is intended to explain the major mechanics of communication in general and of communication by means of objects in particular. Analyses of objects and environments with respect to communicative functions are undertaken.

Prerequisite: Third-year registration or permission of the School of Industrial Design.

Lecture and tutorials three hours a week.

Industrial Design 85.322★**Advanced Studies in Form and Colour**

Students may continue the research and study encountered in Industrial Design 85.221★ and 85.222★ by doing advanced research in some specific area of the phenomena of form and/or colour. Directed study.

Prerequisites: Industrial Design 85.221★ and 85.222★ or permission of the School of Industrial Design.

Lecture and tutorials three hours a week.

Industrial Design 85.330**Projects IIIA**

This course is an introduction to the design principles associated with the evaluation and re-design of an existing product. Topics to be covered include: user/machine relationship, component packaging, and manufacturability. The design project(s) explore some or all of the design principles covered in the lectures.

Prerequisite: Industrial Design 85.232★ or permission of the School of Industrial Design.

Lectures four hours a week, studio eight hours a week.

Course value equivalent to 1.0 credit.

Industrial Design 85.331**Projects IIIB**

This course is an introduction to the principles of innovation as found in industrial design. Topics to be covered include: invention, innovation, entrepreneur-

ship, basic mechanisms. The design project(s) explore some or all of the design principles covered in the lectures.

Prerequisites: Industrial Design 85.330 or permission of the School of Industrial Design.

Lectures four hours a week, studio eight hours a week.

Course value equivalent to 1.0 credit.

Industrial Design 85.335★ and 85.336★

Third-Year Special Industrial Design Studies

Special Industrial Design Studies deal with specific projects, which may differ from year to year depending on the availability of specialists in a particular field or study opportunities as they present themselves.

Prerequisite: Third- or Fourth-year registration, or permission of the School of Industrial Design.

Lectures, tutorials and laboratory six hours a week.

Industrial Design 85.351★

Fine Arts and Design

This course is seen as an opportunity to introduce various cultural subjects by experts from these fields, more specifically, those dealing with the fine and performing arts. The objective is to give the students a sense of context and relevance of industrial design as an integral part of our culture.

Precludes additional credit for Industrial Design 85.350 (no longer offered).

Prerequisite: Industrial Design 85.100★.

Lectures and tutorials three hours a week.

Industrial Design 85.352★

Contextual Nature of Products

This course is seen as an opportunity to introduce various cultural subjects which have an influence on contemporary industrial design. The perspective of the course is anthropological and the objective is to give the students a sense of context and relevance of industrial design as an integral part of our culture. Precludes additional credit for Industrial Design 85.350 (no longer offered).

Prerequisite: Industrial Design 85.100★.

Lectures and tutorials three hours a week.

Industrial Design 85.360★

Anthropometrics and Ergonomics

Concepts of human engineering, anthropometrics and ergonomics are studied, researched and experimentally applied. Special emphasis is given to limits of human performance, visual and tactile displays, man-machine and man-environment interface, measurement, etc.

Prerequisite: Psychology 49.100.

Lectures and discussion three hours a week.

Industrial Design 85.361★

Anthropometrics and Ergonomics Workshop

Laboratory work and experimentation in anthropometric and ergonomic factors as they affect industrial design.

Prerequisite: Industrial Design 85.360★.

Lectures and discussion three hours a week, laboratory three hours a week.

Industrial Design 85.400★

Professional Practice in Industrial Design

The course surveys how industrial designers practise as independent consultants, and how they are employed in industry. The organizational aspects of

independent offices of industrial design, their responsibilities towards their clients and their ways of operation are compared with the role of industrial design and the organizational aspects of the profession within the framework of industrial management. Topics include the form of contracts for industrial design consultancy, ways of determination of fees, legal implications of the profession including those of patents and copyrights. The course also deals with the organization of the profession on a national and an international basis. Representative industrial designers are invited to give their views on professionalism and to present case histories of their operations.

Prerequisite: Industrial Design 85.100★ (Architecture 76.206★).

Lectures and discussion three hours a week.

Industrial Design 85.401★

Industrial Design Seminar

Each year a special topic is chosen to be elaborated on and discussed. The topics deal with problems in the relationship of industrial design to other disciplines or problems regarding the theoretical aspects of industrial design itself.

Prerequisite: Registration in Fourth-year Industrial Design projects.

Industrial Design 85.411★

Advanced Studies in Manufacturing Technology for Industrial Design

Directed study in the field of manufacturing, centred on such topics as: cost analysis, new materials and processes, computer aided manufacturing, numerically controlled machining, machining of moulds, etc. Prerequisites: Industrial Design 85.211★ and 85.212★ or equivalent.

Industrial Design 85.420★

Form Organization

Form organization attempts to design, define and prescribe solids of monolithic nature by means of an abstract system which can be used for instructional purposes to make and verify materialized approximations of such solids. A three-dimensional locus is an example of such a system; other systems are based on controlled growth patterns, geometric generation, typological generation, etc. The course intends to describe variations of such systems, which the students are required to apply in laboratory exercises.

Prerequisites: Industrial Design 85.221★ and 85.222★ or permission of the School of Industrial Design.

Lectures, tutorials and laboratory six hours a week.

Industrial Design 85.430 (2.0 credits)

Major Projects

This course emphasizes the application of design principles acquired in previous courses in a comprehensive design project. The problem area chosen should preferably be product oriented and be of sufficient complexity. The assignment is normally undertaken in consultation with off-campus organizations, industry, etc. Students are supervised individually by members of the Faculty. See also: Industrial Design Projects and Fourth-Year Industrial Design Projects. Prerequisite: Industrial Design 85.331 or permission of the School of Industrial Design.

Lectures and tutorials two hours a week, studio ten hours a week.

Course value equivalent to 2.0 credits.

Industrial Design 85.431**Minor Projects A**

This course enables students to demonstrate their versatility. The choice of projects, therefore, covers a broad spectrum of design principles and applications. Although preferred, it is not strictly required that the minor projects be product-design oriented, nor need they be derived from actual utilisation-problem areas. They could represent research in complementary design fields such as communication, graphic design or design experiments. Although the projects undertaken in this course may be of a less complex nature than the Major Project or the other Minor Project, they always conform to academic standards of quality and are handled in the same systematic way and with the same thoroughness as the Major Project. See also: Industrial Design Projects and Fourth-Year Industrial Design Projects.

Prerequisite: Industrial Design 85.331 or permission of the School of Industrial Design.

Lectures and tutorials two hours a week, studio four hours a week.

Industrial Design 85.432**Minor Projects B**

This course emphasizes the application of design principles acquired in previous courses in a comprehensive design project approved by the Projects Committee. Although the Minor Project is of a less complex nature than the Major Project, it always conforms to academic standards of quality and is handled in the same systematic way and with the same thoroughness as the Major Project. Topics covered are appropriate to the assignment selected.

See also: Industrial Design Projects and Fourth-Year Industrial Design Projects.

Prerequisite: Industrial Design 85.331 or permission of the School of Industrial Design.

Lectures and tutorials two hours a week, studio four hours a week.

Industrial Design 85.435★ and 85.436★**Fourth-Year Special Industrial Design Studies**

Like the Third-year Special Industrial Design Studies, those of Fourth year deal with specific projects, which may differ each year depending on the availability of specialists among the faculty of the School of Industrial Design or on particular opportunities as they present themselves.

Prerequisite: Fourth-year registration or permission of the School of Industrial Design.

Lectures and tutorials two hours a week, studio four hours a week.

Industrial Design 85.440★**Industrial Practice Internship Field Reports**

During the periods of internship in industry, or in alternative internships approved by the School of Industrial Design, the student is required to study technological phenomena in their relationship to industrial design. A field report, describing such phenomena and relationships, must be submitted to the School of Industrial Design for evaluation and marking. The quality and quantity of the field report must minimally reflect a period of internship study of 12 weeks. Copies of field reports will be filed in the School of Industrial Design to be accessible to other students. See also Industrial Practice Internship.

(Arts)

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Academic Administration

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Cognitive Science
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Directed Interdisciplinary Studies
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Programs of Study

The Institute for Interdisciplinary Studies is the administrative centre for interdisciplinary programs in the Faculties of Arts and Social Sciences that do not have another home. The Institute offers Pass and Honours programs in Environmental Studies and Directed Interdisciplinary Studies, an Honours program in Cognitive Science, and Pass and Honours programs in Child Studies.

The degree of Bachelor of Arts in Interdisciplinary Studies is pursued by means of a plan of study proposed by the student. Lists of courses from which proposals may be drawn are provided in the following areas: Aboriginal Studies, African Studies, Asian Studies, Labour Studies, Latin American and Caribbean Studies, Medieval Studies, United States Studies and Urban Studies. (For Visual and Performing Arts, see the listings for the School for Studies in Art and Culture, p. 138). The student may propose a plan of study in an area of special interest to them that they define themselves.

In addition, the Institute offers three kinds of interdisciplinary courses: Humanities (course prefix 02), Social Science (course prefix 03) and combined Humanities/Social Science (course prefix 04). These courses are listed on p. 343.

Child Studies

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Program Co-ordinator
Tina Daniels

Members of the Committee
To be named

General Information

The B.A. Child Studies program was developed in collaboration with Algonquin College of Applied Arts and Technology. This program requires a completed Early Childhood Education (ECE) diploma from Algonquin College or from an equivalent program at a similar institution. Both B.A. (Pass) and B.A. (Honours) degrees are offered.

Students interested in enrolling in this program currently with their ECE studies should contact the Program Coordinator.

This program is designed to enable students to develop an interdisciplinary perspective on early childhood. To this end, it introduces students to a range of social, psychological, cultural, ethical and other factors affecting young children and their families in a Canadian context, as well as to the empirical methods and techniques used to study early childhood. Honours students will be offered the opportunity to study a particular area of interest (e.g., Developmental, Sociocultural, Managerial).

Admission Requirements

Enrolment into the program is limited. Successful applicants must demonstrate a high level of personal enthusiasm and professionalism, excellent communication skills (oral and written) and evidence of previous academic success. Further information may be obtained from the Program Co-ordinator to whom applications for admission must be made, presenting:

- (a) the diploma in Early Childhood Education from Algonquin College or an equivalent Early Childhood Education program from another institution;
- (b) a B+ average or better at the college level;
- (c) satisfactory performance in field placements;
- (d) three letters of reference, including at least one letter from a faculty member in the ECE program at Algonquin (or equivalent), and one letter from the director of a child care centre;
- (e) a letter of application, including a statement of professional goals and expectations of the program, and a curriculum vitae.

Graduation Regulations

In order to graduate, students must fulfil all University graduation requirements (see p. 52) and all Faculty requirements (see p. 81), in addition to all the Major requirements set out below.

Pass Program

For the Pass degree, candidates for the Child Studies program must meet the normal requirements of 15.0 credits. These will include a core of 8.5 credits plus 1.5 program elective credits. Students who have obtained the ECE diploma with a B+ average or better

will be granted up to a maximum of 5.0 credits on admission.

In collaboration with the Program Co-ordinator, students will design individual programs with a clear theme. This program should be complementary to their previous studies in early childhood education.

Course Requirements:

1. 1.0 credit in Interdisciplinary Studies:

- 04.251★ Issues in Child Studies
04.391★ Themes in Interdisciplinary Inquiry

2. 2.5 credits in Psychology:

- 49.100 Introductory Psychology
49.250★ Foundations of Developmental Psychology
Two of: 49.355★ Exceptional Children, 49.356★ Cognitive Development, 49.357★ Social Development

3. 2.0 credits in Sociology or a related discipline:

- One of: 56.220 Canadian Society, 56.235 Ethnic Group Relations, 54.230 Social Systems of Non-Western Societies, 12.100 Introduction to Canadian Studies, 24.130 Introduction to Canadian History
53.315 Sociology of Education

4. 1.0 credit in research methods:

- One of: 49.200 Introduction to Psychological Research and Statistics, 53.203 Introduction to Sociological Research

5. 1.0 credit in the Faculty of Science.

6. 1.0 credit in the Faculty of Arts.

7. 1.5 elective credits proposed by the student and approved by the Program Co-ordinator.

8. Any additional credits required to meet the total specified in the Statement of Standing on Admission, as proposed by the student and approved by the Program Co-ordinator.

Some students may have to take courses extra to the degree to meet prerequisite requirements.

A list of program electives that may be of interest can be obtained from the Program Co-ordinator.

Honours Program

For the Honours degree, candidates for the Child Studies program must meet the normal requirements of 20.0 credits. These will include a core of 10.0 credits plus 5.0 program elective credits. Students who have obtained the ECE diploma with a B+ average or better will be granted up to a maximum of 5.0 credits on admission.

The requirements are the same as those for the Pass degree, but with the following additions:

1. Interdisciplinary 03.410★ Seminar on Special Research Problems in Social Sciences.
2. Interdisciplinary 04.498 Honours Project.

3. 3.5 elective credits proposed by the student and approved by the Program Co-ordinator. These must include a minimum of 1.0 credit at the 300- or 400-level. Some students may have to take courses extra to the degree to meet prerequisite requirements.

In collaboration with the Program Co-ordinator, Honours students will develop a field of interest. Normally, a minimum of 2.0 elective credits should be in the field of interest. Three possible fields of interest are Developmental, Sociocultural and Managerial. A list of courses related to these fields can be obtained from the Program Co-ordinator.

Honours students who plan to apply for admission to Teacher's College or a graduate program should seek advice from the Program Co-ordinator in selecting their elective credits. Some substitutions to required courses may be acceptable, with permission of the Program Co-ordinator and the relevant department.

If a student admitted into either the Pass or Honours program changes to another program after entry, transfer credits will be reassessed by the new program. This may result in a reduction of credits.

Cognitive Science

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Program Co-ordinator
John Logan

Members of the Committee

Ann Laubstein
Helmut Zobl
William Petrusic
Chris Herdman
John Logan
Franz Oppacher
Jean-Pierre Corriveau
Andrew Brook, Chair

General Information

Cognitive Science is a multi-disciplinary approach to the study of human cognition, perception, emotion and so on. First mooted as a branch of knowledge with the development of computers in the years following WWII, it took on an identity as a separate discipline in the mid-1970's. Now found at over 150 universities worldwide, Philosophy, Linguistics, Psychology and Computer Science have always been major contributors to its work. At Carleton, all four disciplines contribute directly to the undergraduate program. Other academic units such as Sociology/Anthropology and Biology offer highly relevant courses. Going all the way from the abstract study of concepts of cognition at one end to well-defined empirical research into language and cognition and the specifics of modelling cognition on computers on the other, Cognitive Science presents a unique opportunity to study four major approaches to human cognition, perception, etc. at the same time. In addition,

tion to a satisfactory overview of the four approaches together, the Carleton program also offers students an opportunity to acquire deeper knowledge of one of them. This feature of Carleton's program greatly expands the range of options open to graduates of the program.

Admission Requirements

The admission requirements for Cognitive Science may be higher than those for Honour programs as a whole. It is likely that the number of places will be limited, so early application is recommended.

Graduation Requirements

In order to graduate, students must fulfil all University graduation requirements (see p. 52) and all Faculty requirements (see p. 81), in addition to the requirements of the Cognitive Science program listed below.

Honours Program

Carleton offers only an Honours program in Cognitive Science. This program consists of three elements: a core of courses taken by all students (9.5 credits); an area of specialization, selected from the five areas of specialization listed immediately below (5 or 5.5 credits); and free options to a total of 20 credits. The five areas of specialization are: Philosophical and Conceptual Issues; Language and Linguistics; the Biological Foundations of Cognition; Cognition and Psychology; and Cognition and Computation.

Note:

Students are not required to complete courses in the order listed. The division into years is merely a guideline. However, students should take prerequisite courses early enough in their program to ensure that they can take upper-year courses when they wish to do so.

Core Courses

First Year

- 04.101★ Introduction to Cognitive Science
- 29.100 Introduction to Linguistics
- 49.100 Introduction to Psychology
- 95.105★ Introduction to Programming
- 32.151★ Mind and Truth (recommended but not required)

Second Year

- 04.201★ History of Cognitive Science
- 95.106★ Computer Applications (may also be taken in First year, requires a 100-level course in Calculus which may be taken concurrently)
- 95.185★ Introduction to Discrete Structures
- 29.201★ Phonetics

- 29.203★ Language Analysis
- 49.220★ Biological Foundations of Behaviour or 49.270★ Introduction to Cognitive Psychology
- 32.252★ Philosophy of Mind
- 1.5 credits from an area of specialization

Third Year

- 32.201★ Logic or 32.336★ Symbolic Logic
- 95.202★ Data Structures and Data Types
- 95.207★ Programming Language Concepts
- 29.232★ Semantics
- 49.220★ Biological Foundations of Behaviour or 49.270★ Introduction to Cognitive Psychology (see second year)
- 1.5 credits from the chosen area of specialization

Fourth Year

- 95.407★ Applied Artificial Intelligence
- Honours essay, 1.0 Fourth-year credit and additional required credits, if any, from the chosen area of specialization.

Areas of Specialization

Philosophical and Conceptual Issues

- 32.280 Language and Communication (also listed as 29.280)
- 32.332★ Issues in the Philosophy of Science
- 32.351★ Philosophy of Computing
- 32.380 20th-Century Anglo-American Philosophy
- 32.451★ Philosophy and Theories of Mentality
- One of:
 - 32.401★ Philosophy of Language,
 - 32.402★ Philosophy of Social Science,
 - 32.411★ Philosophy of Action,
 - 32.421★ Epistemology, 32.431★ Philosophy of Logic
- 04.498 Honours Essay

Language and Linguistics

- 29.302★ Phonology
- 29.304★ Grammatical Theory
- Four of:
 - 29.262★ Child Language, 29.263★ Language and Education, 29.264★ Speech and Language Problems, 29.271★ Sociolinguistics, 29.361★ Psycholinguistics, 29.311★ Historical Linguistics, 29.393★ Special Topics.
- Two of:
 - 29.401★ Advanced Phonology,
 - 29.402★ Advanced Grammar, 29.409★ Topics in General Linguistics, 29.462★ Language Acquisition
- 04.498 Honours Essay

The Biological Foundations of Cognition

- 49.200 Introduction to Psychological Research and Statistics
- 49.300 Design and Analysis in Psychological Research
- 49.320 Behavioural Neuroscience
- One of:
 - 49.322★ Sensory Processes or 49.372★ Perception, 49.322★ recommended
- 1.0 credit at the Fourth-year level or above, to be chosen in consultation with the Co-ordinator
- 04.498 Honours Essay

Cognition and Psychology

- 49.200 Introduction to Psychological Research and Statistics
- 49.300 Design and Analysis in Psychological Research
- 49.370 Cognition
- One of: 49.322 Sensory Processes or 49.372★ Perception, 49.372★ recommended
- 1.0 credit at the Fourth-year level or above, to be chosen in consultation with the Co-ordinator
- 04.498 Honours Essay

Cognition and Computation

- 95.102★ Introduction to Computers (could also be taken in First year)
- 95.302★ Compiler Construction
- 95.402★ Computer Graphics
- 95.405★ Robotics and Computer Vision (requires Mathematics 69.208★, and either Physics 75.105 or both 75.101★ and 75.102★)

1.0 additional Second-year credit or above in Computer Science, chosen in consultation with the Co-ordinator

1.0 Fourth-year credit or above in Computer Science, chosen in consultation with the Co-ordinator

04.498 Honours Essay

Prerequisites

Students should check the prerequisites for courses carefully, especially in their area of specialization, to ensure that by the year in which they wish to enrol in a given course, they have all prerequisites of that course.

The Honours Essay must be done in a student's area of specialization. To enrol in 04.498, a student must have satisfied all the requirements of that area of specialization except those of fourth-year.

Directed Interdisciplinary Studies

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Program Co-ordinator
Charles Gordon

Members of the Committee

Fran Cherry
Ben Jones
Shelagh Squire
John Taylor
Priscilla Walton

General Information

In Directed Interdisciplinary Studies, students concentrate on a theme or field of interest outside the formal programs offered by departments, schools or institutes. Students may choose courses from vari-

ous disciplines bearing directly upon their interests. Some possibilities are medieval studies, Renaissance studies, Third World studies, African studies, Asian studies, comparative literary studies, studies in the fine arts, labour studies, Latin American and Caribbean studies, urban studies, visual or performing arts, or studies leading to a specific vocational goal not met by existing programs. Please see below, for listings of courses and committees in some of these fields. Students in Directed Interdisciplinary Studies may take either a Pass or an Honours program.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all Committee regulations and requirements as set out below.

Pass Program

Students applying for the Pass program in Directed Interdisciplinary Studies must complete the prescribed application form, which is available from the Institute for Interdisciplinary Studies office. They are required to list 4.5 credits which meet the requirements listed in **Part A** below, and 5.5 credits which meet the requirements listed in **Part B** below. The credits in **Part B** must be related to a significant theme or field of interest and fit into a coherent pattern. It is expected that the credits of **Part A** will be related to that theme as well. On acceptance of the proposed pattern of study, the credits described above, or variations agreed to by the Committee, become a requirement for completion of the degree.

Part A

1. 1.0 credit that addresses the temporal dimension of human societies, analyzing times before the current era, and societies other than our own.
2. 1.0 credit that addresses the artifacts of the imagination, in literature and other forms, or that addresses the life of the imagination and the culture.
3. 1.0 credit that addresses the understanding of social and/or natural processes, and the ways in which that understanding is obtained in science and social science.
4. 1.0 credit that addresses matters of human values, ethics and social responsibilities.
5. Interdisciplinary Studies 04.391★.

Lists of appropriate courses to meet these requirements will be provided.

Part B

1. 5.5 credits as proposed by the student and approved by the committee.
2. At least one of these credits must be at the Third-year level.

Honours Program

Students applying for the Honours program in Directed Interdisciplinary Studies must complete the prescribed application form, available from the Institute for Interdisciplinary Studies office. They are required to list 4.5 credits which meet the requirements listed in **Part A** below, and 9.5 credits which meet the requirements listed in **Part B** below, along with honours essay (04.498). The credits in **Part B** must be related to a significant theme or field of interest and fit into a coherent pattern. It is expected that the credits of **Part A** will be related to that theme as well. On acceptance of the proposed pattern of study, the credits described above, or variations agreed to by the Committee, become a requirement for completion of the degree.

Part A

1. 1.0 credit that addresses the temporal dimension of human societies, analyzing times before the current era, and societies other than our own.
2. 1.0 credit that addresses the artifacts of the imagination, in literature and other forms, that addresses the life of the imagination and the culture.
3. 1.0 credit that addresses the understanding of social and/or natural processes, and the ways in which that understanding is obtained in science and social science.
4. 1.0 credit that addresses matters of human values, ethics and social responsibilities.
5. Interdisciplinary Studies 04.391★.

Lists of appropriate courses to meet these requirements will be provided.

Part B

9.5 credits as proposed by the student and approved by the committee including:

1. 04.498 Honours Essay.
2. At least 4.0 credits in one discipline.
3. At least 3.0 credits at the 400-level or above.

Pass and Honours

1. Prior to submitting a formal application, students are advised to consult with the Program Co-ordinator for assistance in working out a suitable pattern of courses.
2. To allow time for adequate appraisal by the Committee, the proposal should be submitted as early as possible before the year of entry to the program (by June 1 for September registration and by November 1 for January registration).
3. Students may apply for admission to the program at any time after completion of their first 5.0 credits and before they begin their last 5.0 credits towards the degree.
4. Normally, 3.0 credits in the student's field of inter-

est are to be included among the last 5.0 credits taken towards the degree.

5. In order to graduate, students must have an overall GPA of 4.0 or better in all 15.0 credits counted towards the degree, as well as a GPA of 4.0 or better in the 10.0 credit pattern approved for the degree.

Interdisciplinary Subject Areas

The Institute for Interdisciplinary Studies sponsors the interdisciplinary subject areas described below. There are no majors in these areas but there is strong teaching and active research interest. Students interested in pursuing work in any of these areas either through the Directed Interdisciplinary Studies major or in conjunction with a disciplinary major should arrange a meeting with the area co-ordinator. Where a co-ordinator is not named, contact the office of the Institute for Interdisciplinary Studies.

In all cases detailed descriptions of the courses listed for each area can be found in the various departmental courses listings. Courses at the 500-level are described in the *Calendar of the Faculty of Graduate Studies and Research*.

Aboriginal Studies

Co-ordinator: Armand Garnett Ruffo

Individual departments at Carleton offer courses concerned with aboriginal issues. Growing interest in Canadian first peoples has promoted a gradual increase in courses about aboriginal cultures and an increase in related activities on campus. No degree program in aboriginal studies exists, but students may submit a coherent pattern of courses selected from the list below for a B.A. or B.A. Honours program in Directed Interdisciplinary Studies, according to the procedures described for this degree in the *Calendar*. See p. 333.

Courses

Applied Language Studies

- | | |
|--------|--|
| 23.190 | Introduction to an Indigenous Language |
| 23.195 | Intensive Introduction to an Indigenous Language |

Art History

- | | |
|---------|--|
| 11.205★ | Arts of the First Peoples: the Woodlands, the Plains, and the Subarctic |
| 11.206★ | Arts of the First Peoples: the Southwest, the West Coast, and the Arctic |
| 11.313★ | Themes and Issues in African, Oceanic, and Native American Arts |
| 11.314★ | Inuit Art |
| 11.404★ | Topics in Contemporary Inuit Art |
| 11.405★ | Topics in Canadian Indian Art |
| 11.502★ | Aspects of Canadian Indian Art |
| 11.507★ | Aspects of Inuit Art |

Canadian Studies

- | | |
|--------|----------------------------|
| 12.510 | Northern and Native Issues |
|--------|----------------------------|

Geography

- 45.351★ Northern Lands
 45.431★ Advanced Cultural Geography
 45.570★ Problems of Development in Arctic and Subarctic Environments

History

- 24.352★ Aboriginal Peoples of British North America to 1867
 24.353★ Aboriginal Peoples of Canada since 1867

Law

- 51.354★ Law and Aboriginal Peoples of Canada
 51.436★ Contemporary Issues in Criminal Law; Canada's Aboriginal People and Criminal Justice Issues in the 1990's

Music

- 30.230★ An Introduction to Ethnomusicology
 30.310 Music in Canada
 30.512★ History of Canadian Music III

Political Science

- 47.402★ Policy Seminar: Problems of Northern Development

Sociology and Anthropology

- 54.207★ The Anthropology of Conquest
 54.318★ Archaeology in Canada
 54.319★ Issues in Canadian Native Studies
 54.470★ Selected Problems in the Study of North American Native Peoples
 54.516★ North American Native Studies
 54.517★ Problems in North American Ethnohistory
 56.383★ The Anthropology of Art I
 56.384★ The Anthropology of Art II
 56.465★ Selected Problems in the Study of Ethnic and Race Relations

Other

Art History, the Centre for Applied Language Studies, Canadian Studies, English, Law and Sociology/Antropology have special topics courses which, from year to year, may focus on aboriginal issues.

African Studies

Co-ordinator: Fiona Mackenzie

Although there is no degree program in African Studies at Carleton, there is a strong teaching and research interest. Courses relating to Africa have been given in various departments and schools for many years and students can select these courses as part of their degree programs.

Students may also submit a pattern of courses of African Studies for a B.A. Pass or Honours program (Directed Interdisciplinary Studies) according to the procedures described for this degree in the Calendar. (See p. 333.)

Courses*Applied Language Studies*

- 23.130 Intensive Introductory Arabic

Art History

- 11.313★ Themes and Issues in African, Oceanic and Native American Arts

Economics

- 43.363★ Introduction to Economic Development
 43.457★ The Economics of Development
 43.458★ International Aspects of Economic Development

English

- 18.496★ Studies in African or Caribbean Literature

Geography

- 45.329★ Sustainable Development and Third World Environments
 45.330★ Sustainable Development in Sub-Saharan Africa
 45.395★ Selected World Regional Problems
 45.520★ Issues of Development in Africa (46.563★)
 45.540★ Territory and Territoriality (46.542★)
 45.544★ Gender and Environments

History

- 24.275 History of Africa
 24.373★ North Africa and the Near East in the Era of Western Dominance

International Affairs

- 46.529★ Conflict in Southern Africa
 46.533★ Science, Technology and International Affairs: The Third World
 46.537★ Macroeconomics in a Development Context
 46.542★ Territory and Territoriality (45.540★)
 46.563★ Issues of Development in Africa (45.520★)
 46.568★ Indigenous Perspectives on Third-World Development
 46.581★ Regional Cooperation among Developing Countries

Law

- 51.563★ International Economic Law: Regulation of Trade and Investment (International Affairs 46.555★)

Music

- 30.208★ Introduction to Ethnomusicology
 30.231★ Musics of Eastern Cultures
 30.251★ Aural Training II

Political Science

- 47.310 Government and Politics in Africa
 47.344★ Comparative Public Administration
 47.352★ Women in Politics: Third World
 47.414★ Theory and Practice in Third World Development
 47.415★ Selected Problems in Third World Development
 47.423★ The Politics of Southern Africa
 47.482★ International Politics of Africa
 47.517★ Selected Problems in African Politics
 47.522★ Politics of Third World Development
 47.523★ The Politics of Southern Africa
 47.545★ Public Administration in Developing countries
 47.581★ Foreign Policies of African States

Public Administration

- 50.573★ Industrialization and Development

Sociology and Anthropology

- 56.235 Ethnic Group Relations
-
- 53.544★ Race, Ethnicity and Class in Contemporary Societies

Asian Studies

Co-ordinator: E. Tepper

No degree program for Asian studies exists but members of the Committee for Asian Studies offer a wide variety of courses about Asia. Research activities are encouraged through such units as the Asian Pacific Research and Resource Centre. The University is a member of the Shastri Indo-Canadian Institute. The Norman Paterson School of International Affairs supports graduate studies and research on Asia. Students may submit a coherent pattern of courses selected from the list below for a B.A. Pass or Honours (Directed Interdisciplinary Studies), according to the procedures described for this degree in the Calendar. (See p. 333.)

Courses*Applied Language Studies*

- 23.110 Intensive Introductory Mandarin
-
- 23.115 Intensive Introductory Thai
-
- 23.120 Introductory Japanese
-
- 23.125 Intensive Introductory Korean
-
- 23.130 Intensive Introductory Arabic
-
- 23.140 Introduction to Indonesian/Malaysian
-
- 23.150 Modern Spoken Hebrew
-
- 23.160 Vietnamese Language and Culture

Business

- 42.463★ International and Comparative Management

Comparative Literary Studies

- 17.204★ Japanese Literature (in English Translation)
-
- 17.205★ Chinese Literature (in English Translation)

Economics

- 43.457★ The Economics of Development
-
- 43.458★ International Aspects of Economic Development
-
- 43.487★ Comparative Economic Systems II
-
- 43.555★ Economic Development: International Aspects

Geography

- 45.540★ Territory and Territoriality

History

- 24.170 Europe and the Non-Western World
-
- 24.278 The Middle East: 1798 to the Present
-
- 24.285 History of China
-
- 24.286 History of Japan
-
- 24.385★ Twentieth-Century China
-
- 24.386★ Twentieth-Century Japan
-
- 24.485 Selected Problems in East-Asian History

International Affairs

- 46.508 Development Planning: Theory and Practice
-
- 46.527★ Conflict in the Middle East
-
- 46.557 International Economic Law: Regulation of Trade and Investment
-
- 46.560 Human Resource Development
-
- 46.561★ Historical Dimensions of Development and Underdevelopment
-
- 46.567★ Issues in Development in Southeast Asia
-
- 46.569 Social Cost-Benefit Analysis and Development Project Evaluation
-
- 46.580★ Pacific Economic and Political Relationships

Music

- 30.209★ Music of Asian High Cultures

Political Science

- 47.312 Government and Politics of East Asia
-
- 47.315 Government and Politics of South and South-East Asia
-
- 47.332★ East Asian Political Thought-China, Japan and Korea
-
- 47.483★ Foreign Policies of Major East Asian Powers
-
- 47.484★ The Interstate Relations of South and Southeast Asia
-
- 47.518★ State, Revolution and Reform in East Asia

Religion

- 34.105★ Introduction to the Hindu Tradition
-
- 34.106★ Introduction to the Buddhist Tradition
-
- 34.109★ Introduction to Islam
-
- 34.278 The Middle East: 1798 to the Present
-
- 34.320★ Selected Problems in Indian Thought
-
- 34.342★ Selected Topics in Islam

Labour Studies

Co-ordinator: To be announced

The Committee on Labour Studies, consisting of faculty members with research and teaching interests in labour, acts as a co-ordinating unit for activities in this area. An interdisciplinary Labour Studies Research and Resource Centre has been established for use by the University community and the public at large. The University offers a wide range of courses in the humanities and social sciences relating to labour, and students can select those courses as part of their degree program.

Students may also submit a coherent pattern of courses in Labour Studies for a B.A. Pass or Honours (Directed Interdisciplinary Studies). Assistance in planning such a pattern is available from the co-ordinator.

Courses

In developing a pattern in Labour Studies, the student can choose from the following suggested basic and related courses.

Basic Courses*Business*

- 42.312★ Personnel Management
 42.317★ Introduction to Industrial Relations

Economics

- 43.356★ Introduction to Labour Economics
 43.357★ Introduction to Industrial Relations
 43.436★ Employment Economics and Labour Policy
 43.465 Industrial Relations

History

- 24.222 The Industrial Revolution
 24.331★ Quebec Since the 1860s
 24.335 History of Canadian Labour
 24.340★ History of Canadian Socialism since 1890
 24.355★ History of British Columbia
 24.425 Selected Problems in the Political Economy of Canadian Labour
 24.439 Modern Canada Since 1939

Law

- 51.341★ Employment Law
 51.345★ Labour Law
 51.440★ The Arbitration Process in Labour Relations
 51.445★ Labour Relations in the Public Service

Philosophy

- 32.220 Introduction to Marxist Philosophy
 32.284★ Environments, Technology and Values
 32.330 Social Philosophy

Political Science

- 47.306★ Social Power in Canadian Politics
 47.412★ Politics of Western Liberal Democracies
 47.413★ The State in Advanced Capitalist Societies
 47.416★ Labour and the Canadian State
 47.431★ Marxist Thought
 47.432★ Contemporary Marxism

Sociology/Anthropology

- 53.257★ The Sociology of Work
 53.258★ The Sociology of Occupations and Professions
 53.346★ Industrial Sociology
 53.348★ Collective Behaviour and Social Movements
 53.381★ Sociology of Law (Law 51.316★)
 56.458★ Workshop in Political Sociology-Anthropology

Related Courses

- Business: 42.311★, 42.413★
 Economics: 43.325, 43.344★
 History: 24.234, 24.235, 24.270, 24.325★, 24.329★, 24.330★, 24.332, 24.337, 24.370, 24.433, 24.458
 Law: 51.203, 51.205, 51.301, 51.321★, 51.353
 Philosophy: 32.202, 32.409
 Political Science: 47.200, 47.335★, 47.345★, 47.400A

Sociology: 53.247, 54.333★, 53.345★, 53.347★, 53.433★, (Law 51.417★), 53.452★

Other courses in specific disciplines may be applicable; students should consult advisers in these disciplines.

Latin American and Caribbean Studies

Co-ordinator: To be announced

At present, no degree program in Latin American and Caribbean Studies exists at Carleton. It is possible, however, for students to construct a program for a B.A. Pass or Honours degree (Directed Interdisciplinary Studies) that could focus on the Latin American and Caribbean region. (See p. 333 for the prescribed procedures for this Degree.)

Of particular interest to some students may be a Pass or Honours degree in Spanish with supporting work in one or more of the Social Sciences, or a Social Science program with supporting work in Spanish. The same combinations would be possible for those students interested in French and the French Antilles or in English and the English Speaking Caribbean.

Courses with a Latin American and Caribbean content are listed below. Detailed course descriptions may be found in the departmental listings of this Calendar. Graduate level courses are described in the Calendar of Graduate Studies and Research.

Knowledge of languages is indispensable for the study of the region. The language courses relevant for Latin America are described under the listings of the Departments of Spanish and French in this Calendar.

Courses*Biology*

- 61.393★ Biology and Development of Renewable Resources

Economics

- 43.363★ Introduction to Economic Development
 43.457★ The Economics of Development
 43.458★ International Aspects of Economic Development

English

- 18.496 Studies in African or Caribbean Literature

Film Studies

- 19.421★ Selected Topic in National Cinemas (Latin American and the Caribbean)

French

- 20.470★ Littératures et cultures de la francophonie I
 20.471★ Littératures et cultures de la francophonie II

Geography

- 45.220★ Geography of the Global Economy
 45.329★ Sustainable Development and Third World Environments

History

- 24.236 The Spanish and English Colonies in North America
 24.237 The History of Latin America
 24.371★ A Selected Period in International Economic History
 24.471 Selected Problems in International Economic History

International Affairs

- 46.533 Science, Technology and International Affairs: The Third World
 46.561 Historical Dimensions of Development and Underdevelopment
 46.564 Issues in Development in Latin America
 46.568 Indigenous Perspectives on Third World Development
 46.581 Regional Co-operation Among Developing countries

Music

- 23.230★ An Introduction to Ethnomusicology

Political Science

- 47.215 Comparative Politics
 47.260 International Politics
 47.311 Government and Politics of Latin America
 47.318★ Women in Developing Polities: A Comparative Assessment
 47.414★ Theory and Practice in Third World Development
 47.415★ Selected Problems in Third World Development

Public Administration

- 50.515 Management in the Public Service
 50.517 Public Management in Developing Countries
 50.567 Political Economy of the State

Social Work

- 52.519 Social Policy in Latin America and the Caribbean

Sociology and Anthropology

- 54.318★ Archaeology in Canada
 54.333★ Economic Anthropology
 53.360 Development and Social Change
 56.465★ Selected Problems in the Study of Ethnic and Race Relations

Spanish

- 38.350★ Spanish-American Literature 1500-1888
 38.351★ Spanish-American Literature from Modernism to the Present
 38.460★ Twentieth Century Spanish-American Novel I
 38.461★ Twentieth Century Spanish-American Novel II
 38.470★ Twentieth Century Spanish-American Poetry I
 38.471★ Twentieth Century Spanish-American Poetry II
 38.560 Aspects of Spanish-American Literature after 1888
 38.570 Special Problems in Spanish-American Literature

Intensive Spanish Program and Winter Program Abroad (see p. 505).

Medieval Studies

Co-ordinator: D. le Berrurier

The University offers a wide range of courses in the humanities and social sciences relating to the Middle Ages, and students can select these courses as part of their degree program.

Students may also submit a coherent pattern of courses in Medieval Studies for a B.A. Pass or Honours (Directed Interdisciplinary Studies), in accordance with the procedures described for this degree in the Calendar, p. 333. Contact the Co-ordinator for assistance in planning a program.

Courses

Art History

- 11.220★ Western Medieval Art
 11.221★ Eastern Medieval Art
 11.325★ Russian Art
 11.327★ Gothic Architecture and Monumental Sculpture
 11.328★ Gothic Minor Arts
 11.393★ Practicum in Art History through Archaeology
 11.422★ Topics in Eastern Medieval Art
 11.423★ Topics in Western Medieval Art

Classics

- 13.302 The Later Roman Empire (also listed as History 24.302)
 13.303 The History of the Byzantine Empire, 527-1453 A.D. (also listed as History 24.303)
 13.402 Beginnings of Early Medieval Europe and the Near East (also listed as History 24.402)

This Department offers several courses in Greek and Latin.

Medieval Latin may be taken on a tutorial basis.

English

- 18.312 Old English
 18.322 Chaucer and the Literature of Medieval England
 18.428★ Studies in Medieval Literature I: Topic for 1996-97: *Chaucerian dream vision and romance*
 18.492★ Studies in Medieval Literature II: Topic for 1996-97: *Gawain poet's treatment of homily, dream vision and romance*

French

- 20.261★ La littérature du Moyen Age

German

- 22.430 Medieval Language and Literature

History

- 24.205 England during the Middle Ages
 24.302 The Later Roman Empire (also listed as Classics 13.302)

- 24.303 The History of the Byzantine Empire, 527-1453 A.D. (also listed as Classics 13.303)
- 24.306★ Early Medieval Thought
- 24.307★ Later Medieval Thought
- 24.402 Beginnings of Early Medieval Europe and the Near East (also listed as Classics 13.402)
- 24.405 Selected Problems in Medieval History
- 24.406 Medieval Intellectual History

- Italian*
- 26.340 Development of Literary Genres from the Thirteenth Century to the Renaissance

- Music*
- 30.200★ Music in the Middle Ages
- 30.430★ Notation of Medieval and Renaissance Music

- Philosophy*
- 32.225 Reason and Revelation
- 32.473★, 32.474★ Special Topic in Medieval Philosophy

- Political Science*
- 47.334 Ancient and Medieval Political Thought

- Spanish*
- 38.415★ Medieval Spanish Literature from the Origins through 1300
- 38.416★ Medieval Spanish Literature, 1300-1500

United States Studies

Co-ordinator: To be announced

No degree program in United States Studies exists, but students may utilize the considerable number of relevant courses already offered at Carleton to develop a relevant plan of study in this area. The aim of the United States Studies concentration within Directed Interdisciplinary Studies is to introduce students to a broad and systematic study of the United States and its peoples; to give a broad understanding of their history, culture and society and to study the relationships between these various aspects of American experience.

Courses

- Art History*
- 11.305★ American Architecture
- 11.306★ American Painting and Sculpture
- 11.406★ Topics in American Art

- Economics*
- 43.305★ Selected Topics in Economic History
- 43.426★ Topics in North American Economic History

- English*
- 18.272 Introduction to American Literature
- 18.371 American Poetry
- 18.373 American Fiction
- 18.471★ Selected Topic in American Poetry
- 18.478★ Selected Topic in American Literature I

- 18.479★ Selected Topic in American Literature II

Film Studies

- 19.100 Introduction to Film Studies
- 19.325 Studies in American Cinema

History

- 24.236 The Spanish and English Colonies in North America
- 24.240 History of the U.S.A.
- 24.334★ Canada-United States Relations
- 24.341★ The American Revolution
- 24.342★ The United States 1819 to 1850
- 24.344 The U.S. in the 20th Century
- 24.346★ History of African-American Women
- 24.347★ Blacks in the United States
- 24.348 American Intellectual History
- 24.349 History of the United States Foreign Policy since 1865
- 24.440 A Selected Period in U.S. History
- 24.442 North American Colonial Rebellions and Independence Movements
- 24.443 The Religious Factor in the History of the United States
- 24.491 United States Historiography

Interdisciplinary

- 04.441 A Seminar in United States Studies

Music

- 30.205★ Ragtime and Jazz
- 30.206★ Anglo-American Popular Music before 1945
- 30.207★ Anglo-American Popular Music after 1945
- 30.312★ Music in the United States in the Twentieth Century

Political Science

- 47.100 Introduction to Political Science
- 47.322 Government and Politics of the United States
- 47.420★ Policy Making in the United States
- 47.421★ Politics of Influence in the U.S.
- 47.466★ American Foreign Policy

Sociology and Anthropology

- 56.100 Principles of Comparative Social Structure: Sociology and Anthropology
- 53.100 Introduction to Sociology

Urban Studies

Co-ordinator: Charles Gordon

The Interfaculty Committee on Urban Studies has drawn up the following list of undergraduate courses in urban studies currently offered at Carleton.

Students may submit a coherent pattern of courses in urban studies for a B.A. Pass or Honours (Directed Interdisciplinary Studies) in accordance with the procedures described for this degree in the Calendar, p. 333. Assistance in planning such a program is available from members of the Committee on Urban Studies.

Courses

Architecture

- 76.308★ Origins of Modern Architecture
- 76.315★ Theories of Landscape Architecture
- 76.328★ Workshop: The Architecture of Urban Space
- 76.423★ (see Sociology 53.339★)
- 76.424★ (see Sociology 53.424★)
- 78.323★ Workshop: Landscape Architecture
- 78.340★ City Organization and Planning Processes
- 78.345★ Workshop: Urban Design
- 78.349★ Workshop: City Organization and Planning Processes

Art History

- 11.302★ Canadian Architecture
- 11.305★ American Architecture
- 11.350★ British Art and Architecture: 1600-1850

Economics

- 43.480 Research Seminar in Urban Economics

Engineering

- 82.334★ Transportation Engineering and Planning
- 82.433★ Urban Planning
- 82.435★ Transportation Geography

Geography

- 45.220★ Geography of the Global Economy
- 45.320★ The Canadian City: Internal Structure and Contemporary Problems
- 45.336★ Resource Analysis in Geography
- 45.423★ Urban Revitalization
- 45.427★ Urban Development and Analysis
- 45.433★ Urban Planning
- 45.442★ Transportation Geography

Earth Sciences

- 67.417★ Geotechnical Mechanics

History

- 24.329★ Canadian Urban History
- 24.330★ The History of Upper Canada to 1867

Law

- 51.374★ Local Government Law

Physics

- 75.291★ Physics of the Environment I
- 75.292★ Physics of the Environment II

Political Science

- 47.302★ Canadian Municipal Government
- 47.303★ Canadian Urban Politics
- 47.410★ Canadian and Comparative Local Government and Politics

Sociology and Anthropology

- 56.253★ Introduction to Human Ecology
- 53.254★ Urban Sociology
- 53.260★ Community
- 53.339★ Society and Shelter (Architecture 76.423★)
- 53.424★ Studies in the Design Profession
- 53.456★ Workshop in Urban Sociology

Visual and Performing Arts

For this area of study please consult the School for Studies in Art and Culture (see p. 138).

Environmental Studies

B443C Loeb Building
Telephone: 520-2600 ext. 8370

Program Co-ordinator
Nancy C. Doubleday

Members of the Committee

Charles Gordon
Katharine Kelly
Brian R. Little
Peeter Kruus
Susan D. Phillips
John Leyden
M.W. Smith
Peter Swan
M.S. Whittington
Frances Woolley

General Information

The B.A. program in Environmental Studies is founded on the premise that the social sciences and humanities can make a significant contribution to the study of environmental issues. The program is designed to enable students to develop an interdisciplinary perspective on human interaction with the environment. To this end it introduces students to the range of social, cultural, economic, political, legal and ethical factors affecting human interaction with the environment, while at the same time ensuring they acquire a basic literacy in the physical and biological sciences.

In the course of their studies, students will develop an understanding and appreciation of the environmental consequences of individual and collective human actions and policies. The program will expose students to the approaches of various disciplines to understanding the environment, as well as the differences and inconsistencies between the various approaches. In addition students will be introduced to methods and techniques appropriate for examining environmental questions from a human and social perspective.

The Major in Environmental Studies is offered at both the Pass and the Honours level within the B.A.

Honours graduates from this program could be eligible to undertake graduate study in Environmental Studies, as well as Geography, Sociology, Political Science, Legal Studies, Philosophy, or some other discipline. Students who contemplate going on to graduate work should seek appropriate advice on selecting their program electives and options.

Graduation Regulations

In order to graduate, students must fulfil all University graduation requirements (see p. 52) and all Faculty requirements (see p. 81), in addition to all the Major requirements set out below.

Pass Program

At the Pass level, the Environmental Studies program consists of a total of 8.0 credits, with a core of 5.5 credits plus 2.5 program electives. The remaining 7.0 credits for the degree are free options.

1. Science 60.100 Science for Today;
2. Philosophy 32.184★ Environmental Ethics;
3. Geography 45.102★ Environment, Resources and Society;
4. Environmental Studies 04.200★ Nature and Environmental Studies;
5. Science 60.200 Science of the Environment;
6. One of: Economics 43.220 Statistical Methods in the Social Sciences; Psychology 49.200 Introduction to Psychological Research and Statistics; Sociology 53.203 Introduction to Sociological Research; Political Science 47.270 Quantitative Political Science Research Methods; Geography 45.204 Geographic Information Analysis;
7. Environmental Studies 04.300★ Environmental Studies Colloquium;
8. One of: Philosophy 32.284★ Environments, Technology and Values; Law 51.380★ Law of Environmental Quality;
9. 2.5 credits to be chosen from the list of Program Electives (see below). At least 1.0 of these credits must be at the 300-level or above.

Honours Program

At the Honours level the Environmental Studies program consists of a total of 12.0 credits, with a core of 8.0 credits plus 4.0 program electives. The remaining 8.0 credits for the degree are free options.

1. Science 60.100 Science for Today;
2. Philosophy 32.184★ Environmental Ethics;
3. Geography 45.102★ Environment, Resources and Society;
4. Environmental Studies 04.200★ Nature and Environmental Studies;
5. Science 60.200 Science of the Environment;
6. One of: Economics 43.220 Statistical Methods in the Social Sciences; Psychology 49.200 Introduction to Psychological Research and Statistics; Sociology 53.203 Introduction to Sociological Research; Political Science 47.270 Quantitative Political Science Research Method; Geography 45.204 Geographic Information Analysis;

7. Environmental Studies 04.300★ Environmental Studies Colloquium;
8. One of: Philosophy 32.284★ Environments, Technology and Values; Law 51.380★ Law of Environmental Quality;
9. Biology 61.393★ Biology and Development of Renewable Resources;
10. Environmental Studies 04.400★ Environmental Studies Seminar;
11. Environmental Studies 04.401★ Environmental Studies Practicum;
12. Environmental Studies 04.497 Honours Essay in Environmental Studies;
13. 4.0 credits to be chosen from the list of Program Electives (see below). At least 1.5 of these credits must be at the 300-level or above.

Prerequisites

In choosing optional courses, especially in First year, students should take into account the prerequisite requirements for courses they will be taking in subsequent years. In particular, as preparation for the statistics/methodology course in requirement 5 (see Pass and Honours program, p. 341), students should include in their First-year course selection an introductory course in at least one of Economics, Sociology, Political Science or Psychology. These courses, along with the introductory course in Law, also serve as prerequisites to many of the courses listed below as Program Electives.

Program Electives

The Environmental Studies major requires a minimum number of Program Electives (2.5 credits for the Pass program, 4.0 for the Honours program, (see Pass and Honours program, p. 341). The list of acceptable electives is laid out below. The courses are grouped according to four themes. Students may concentrate their electives within a single theme or distribute them over various themes according to personal interests and career goals. Students should consult the program co-ordinator about a strategy appropriate for their individual goals, especially if these plans include eventual graduate study.

Additional selections may be made from the departments whose courses appear below. Students may also select courses from Chemistry, Physics, Earth Sciences, Architecture which relate to their chosen theme.

Environment, Economy and Development

Biology
61.393★ Biology and Development of Renewable Resources

Economics
43.386★ Environmental Economics
43.385★ The Economics of Natural Resources

Geography

- 45.211★ Physical Basis of Environmental Management
- 45.220★ Geography of the Global Economy
- 45.311★ Biophysical Resource Assessment
- 45.329★ Sustainable Development and Third World Environments
- 45.336★ Resource Analysis in Geography
- 45.404★ Environmental Impact Assessment
- 45.430★ Comparative Environmental Movements
- 45.443★ Issues in Applied Economic Geography
- 45.445★ Land Resource Use

History

- 24.421 Science and Technology in the Canadian Experience

Sociology/Anthropology

- 54.206★ Cultural Adaptations and the Environment
- 56.253★ Introduction to Human Ecology
- 53.451★ Workshop in Demography/Human Ecology

Technology, Society, Environment

- 59.300 Interactions in Industrial Society
- 59.350★ Interactions in Industrial Society
- 59.401★ Technology and Society: Assessment
- 59.402★ Technology and Society: Forecasting

Environment, Policy and Law

Geography

- 45.404★ Environmental Impact Assessment
- 45.426★ Health, Environment and Society
- 45.430★ Comparative Environmental Movements

History

- 24.421 Science and Technology in the Canadian Experience

Law

- 51.205 Introduction to Public Law
- 51.305★ Law and Regulation
- 51.380★ Law of Environmental Quality

Political Science

- 47.200 Canadian Government and Politics
- 47.402★ Policy Seminar: Problems of Northern Development

Sociology

- 53.348★ Collective Behaviour and Social Movements
- 53.380 Social Policy
- 53.440★ Environment, Ideology and Social Policy

Technology, Society, Environment

- 59.300 Interactions in Industrial Society
- 59.350★ Interactions in Industrial Society

Environmental Attitudes and Ethics

Geography

- 45.230★ The Cultural Landscape
- 45.404★ Environmental Impact Assessment
- 45.430★ Comparative Environmental Movements
- 45.431★ Advanced Cultural Geography

History

- 24.421 Science and Technology in the Canadian Experience

Philosophy

- 32.212★ Contemporary Ethical Theory
- 32.284★ Environments, Technology and Values
- 32.330 Social and Political Philosophy
- 32.441★ Contemporary Moral or Political Philosophy

Sociology/Anthropology

- 54.206★ Cultural Adaptations and the Environment
- 53.348★ Collective Behaviour and Social Movements

Technology, Society, Environment

- 59.300 Interactions in Industrial Society
- 59.350★ Interactions in Industrial Society

Human Population and the Built Environment

Architecture

- 76.310★ The Physical Morphology of the City
- 76.315★ Theories of Landscape Design
- 76.318★ Design of Cities
- 76.319★ Theory of City Form
- 78.345★ Workshop: Urban Design
- 78.392A★ Selected Topics: Workshop in Urban Studies

Engineering

- 82.433★ Urban Planning

Geography

- 45.320★ The Canadian City: Environment, Structure and Contemporary Problems
- 45.370★ Population Geography
- 45.423★ Urban Revitalization
- 45.427★ Urban Development and Analysis

History

- 24.329★ Canadian Urban History

Political Science

- 47.302★ Canadian Municipal Government

Sociology/Anthropology

- 53.251★ Introduction to Population Studies
- 53.254★ Urban Sociology
- 53.260★ Community
- 54.335★ The Prehistory of Human Settlement
- 53.339★ Society and Shelter (also listed as Architecture 76.423★)
- 53.451★ Workshop in Demography/Human Ecology
- 53.456★ Workshop in Urban Sociology

Course Suggestions for Free Options

Biology

- 61.192★ Natural History

Canadian Studies

- 12.100 Introduction to Canadian Studies

- 12.302 Canadian Studies Seminar (when there is environmental content)
 12.402 Canadian Studies Seminar (when there is environmental content)

English Language and Literature

- 18.296 The Writer, Literature and Society

Geography

- 45.302★ Air Photo Interpretation and Remote Sensing
 45.319★ Soils and Environment
 45.335 Development of Canada : The Historical Geographical Perspective
 45.351★ Northern Lands
 45.355★ Development of Canada: The Historical Geographical Perspective

History

- 24.352★ Aboriginal Peoples of British North America to 1867
 24.353★ Aboriginal Peoples of Canada Since 1867
 24.434 History of Northern Canada

Law

- 51.374★ Local Government Law

Philosophy

- 32.211★ History of Ethics

Physics

- 75.291★ Physics of the Environment I
 75.292★ Physics of the Environment II

Political Science

- 47.303★ Canadian Urban Politics

Religion

- 34.235 Religion and Contemporary Moral Issues

Technology, Society, Environment

- 59.403★ Technology and Society: Innovation

Interdisciplinary Courses

The subject areas and specific courses listed here include:

- (a) courses supervised and/or administered by the Institute for Interdisciplinary Studies;
- (b) courses supervised and/or administered by one of the four undergraduate faculties, but which are available as important areas of concentration to students registered in programs offered by other faculties;
- (c) courses offered by members of more than one discipline or faculty available to all students (subject to restrictions outlined within the course descriptions themselves and the regulations of the faculty in which the student is registered);
- (d) listings of courses offered by some or all of the faculties, grouped together by the general subject area they address.

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions* and *Class Schedule* booklet published in the summer.

Arts

Arts 02.150

Arts Seminar

An intensive introduction to close analytical reading, reasoned writing, and the study of text in context. The background for the seminar will be provided by the lectures for Philosophy 32.150D. Readings, somewhat more complex than those in Philosophy 32.150D, follow the same sequence of topics discussed in that course. However, students in Arts 02.150 will be asked to take on further assignments including a major research project in second term.

Open only to first-year students who are also registered in Philosophy 32.150D.

Permission of the department of Philosophy is required.

Seminar three hours a week.

Arts and Social Sciences Courses: Interdisciplinary

Cognitive Science 04.101★

Introduction to Cognitive Science

An introduction to human cognition and 'the mind's new science', cognitive science, and to the contributions of psychology, computer science, linguistics, philosophy and other disciplines to the field.

Three hours a week.

Environmental Studies 04.200★

Nature and Environmental Studies

A required course for Pass and Honours students in the Environmental Studies program. The course will explore a range of conceptual and practical approaches to understanding nature and environment. This exploration will include examples of descriptive, analytical, investigative and experiential approaches to understanding environment from a wide range of perspectives. The students will be expected to read, research, participate and write in a manner that demonstrates an appreciation of the variety and richness of possible approaches to environmental studies and a capacity to integrate effectively among a range of existing approaches.

Prerequisite: Second-year standing in the Environmental Studies program or permission of the Institute. Lectures, seminars and field work three hours a week.

Cognitive Science 04.201★

History of Cognitive Science

A survey of the history and development of cognitive science as a separate branch of knowledge, from its roots in cybernetics and theory of computation in the late 1940's to the large multi-disciplinary, multi-national teaching and research program it has now become.

Prerequisite: Second-year standing or permission of the Institute.

Three hours a week.

Interdisciplinary 04.251★

Issues in Child Studies

This course takes an interdisciplinary approach to Child Studies, introducing students to the perspectives and methods of study employed by various disciplines, including psychology and sociology. Issues related to research ethics will be introduced. Prerequisite: Psychology 49.100 and permission of the Institute.

Lecture and discussion groups, three hours a week.

Environmental Studies 04.300★

Environmental Studies Colloquium

Efforts to deal with the environmental impacts of human actions must acknowledge the interactions between complex natural systems, social values and attitudes, and economic, legal and political concerns. These interactions will be explored, in relation to specific environmental issues, through invited speakers from various academic disciplines and outside agencies.

Prerequisite: Third-year standing in Environmental Studies or permission of the Institute.

Arts and Social Sciences 04.390

The Literature of Existentialism

A study of the origins, development, and principal characteristics of existentialist literature. (Also listed as English 18.390.)

All assigned readings will be in English.

Prerequisite: Third-year standing.

Interdisciplinary 04.391★

Themes in Interdisciplinary Inquiry

A required course for students in the Directed Interdisciplinary Studies program. The course will examine topics chosen by the interdisciplinary faculty, along with various methods of inquiry and styles of thought that may be brought to bear upon them. Student reading and research will compare, contrast and synthesize various perspectives.

Prerequisite: Third-year standing in Directed Interdisciplinary Studies, or permission of the Institute.

Seminar three hours a week.

Environmental Studies 04.400★

Environmental Studies Seminar

Using interdisciplinary case studies, the course examines how societal institutions respond to environmental concerns, how the environment is understood by various stakeholders and how environmental priorities may be reflected in social, political and economic decision-making.

Prerequisite: Registration is restricted to students in the Fourth year of the B.A. (Environmental Studies) Honours program.

Environmental Studies 04.401★

Environmental Studies Practicum

Experience in an external agency setting provides the basis for translating the academic dimension into practical involvement with environmental issues. Academic requirements are satisfied through a final report which integrates the experience gained in the placement with a student's background knowledge. This course is graded on a satisfactory/unsatisfactory basis; there is no supplemental examination. The course may only be taken once for credit.

Prerequisite: Registration is restricted to students in

the Fourth year of the B.A. (Environmental Studies) Honours program.

Interdisciplinary 04.441★

A Seminar in United States Studies

A required course for students in United States Studies area in Directed Interdisciplinary Studies designed to allow discussion and research on topics of an interdisciplinary nature.

Environmental Studies 04.497

Honours Essay in Environmental Studies

A required interdisciplinary research essay for Honours students in the Fourth year of Environmental Studies. The project is carried out by the student in consultation with a faculty supervisor. The project must be approved in advance by the Committee on Environmental Studies. Students must consult with the Program Co-ordinator in selecting a project and a supervisor. Arts and Social Sciences regulations governing Honours Theses and Research Essays apply to this project, which is equivalent to one credit. Prerequisite: Registration is restricted to students in the Fourth year of the B.A. (Environmental Studies) Honours program.

Interdisciplinary 04.498

Honours Project

Interdisciplinary research project for Honours students in the fourth year of all IIS programs except Environmental Studies. In selecting a project, students must consult their Program Coordinator. Only the Program Coordinator can assign a supervisor or grant approval to register in this course. Arts and Social Sciences regulations governing Honours Research Essays and Honours Theses apply. Registration in this course is limited to students in the Fourth year of a B.A. Honours program in IIS.

Science

(for further information contact the office of the Dean of Science, 520-4388)

Science 60.100

Science for Today

This course is designed to acquaint students in Arts and Social Sciences with the science required to understand environmental issues. It commences with a discussion of radiation, energy, and the properties of atoms, molecules and chemical reactions. It will continue with evolution, dynamics of ecosystems and biogeochemical cycles, ending with a discussion of internal and surface processes on the earth, and the earth's resources. The course will be taught by specialists from the departments of Physics, Chemistry, Biology and Earth Sciences.

Not acceptable for credit in a Science program.

Prerequisite: None. A knowledge of Grade 10 advanced level Mathematics will be assumed.

Lectures and demonstrations three hours a week.

Science 60.200

Science of the Environment

This course is designed to extend the experience of students in Arts and Social Sciences into the scientific way of knowing our environment. A description of the state of knowledge of the natural environment will be presented, together with the scientific bases of important environmental issues. The topics covered include: the availability of mineral (including fuel)

resources, the sustainability of renewable resources (including food), maintenance of biodiversity, the potential of solar-based energy sources, climate and the influence of human activity on it, the impact of industrial chemicals on the environment, management of wastes, sources and uses of energy, nuclear energy and its risks. Projects will be assigned each term. These will involve observation/experimental data recording and literature study. Acceptable only as a free elective in a Science program.

Prerequisite: Science 60.100 or two experimental science OACs or one First-year university experimental science course.

Lectures and demonstrations three hours a week and project assignments.

Social Sciences

Social Sciences 03.100

Introduction to Social Sciences

This course introduces the disciplines comprising the social sciences. Integrating diverse disciplinary perspectives, topics addressed include: social sciences and the University, the social scientist in the community, research methods and practice, interdisciplinary approaches to social problems, and information technology in the social sciences. Writing process, problem-solving and critical thinking skills are given special emphasis.

Prerequisites: Registration in Social Sciences 03.100 is limited to students who are in First year and who are concurrently registered in at least one course chosen from the introductory social science courses listed on p.82.

Lectures two hours a week, workshops two hours a week.

Social Sciences 03.101

Human Rights and the Social Sciences

The course will examine human rights issues from a multidisciplinary perspective. Among the topics to be covered are: cultural roots of and influences on inequality; measures of discrimination; the philosophical nature of equality; the role of the state vis-à-vis human rights; social movements; advocacy and empowerment of vulnerable groups; understanding the nature of the anger of victims of discrimination; and, legal instruments and precedents involved in the development of human rights. Study of important cases and experiences will be used to trace the evolution of human rights principles.

Lectures and discussion groups, three hours a week.

Social Sciences 03.300*

Computer Applications in the Social Sciences

An introduction to the use of mainframe and micro-computer applications in social science research. Topics covered may include statistical packages, database management, word processing, graphics, computer communications, spread sheets, computer data collection and laboratory control.

Prerequisites: Computer Science 95.101*, or any programming course, and a research-methods course.

Social Sciences 03.401*

Innovations in Social-Science Data Collection and Measurement

This course provides an opportunity to study recent innovations in social-science data collection and measurement. It is an interdisciplinary course of interest to senior students, researchers and practitioners who already have a preliminary foundation in social science methods. Topics emphasized vary from year to year, but developments in sampling theory, survey instrument design, and reduction of measurement bias are examples of intended topics. Prerequisite: One full credit, or equivalent, in methodology in one of the social sciences, or permission of the program co-ordinator.

Social Sciences 03.402*

Innovations in Quantitative Analysis for the Social Sciences

This course provides an opportunity to study recent innovations in quantitative analysis of social science data. It is an interdisciplinary course of interest to senior students, researchers and practitioners who already have a preliminary foundation in quantitative analysis for the social sciences. Topics emphasized vary from year to year, but linear restriction modelling, log-linear techniques and developments in time series analysis are examples of intended topics.

Prerequisite: One full credit, or equivalent, in methodology in one of the social sciences, or permission of the program co-ordinator.

Social Sciences 03.410*

Seminar on Special Research Problems in Social Sciences

This is a research-oriented honours seminar that focuses on special problems in the Social Sciences. Prerequisite: Fourth-year honours in a social sciences discipline or permission of the program co-ordinator.

(Science)

Academic Administration

Chair

G.R. Carmody

Members of the Committee

G.R. Carmody

J. Kelly

B.R. Lifeso

S. Peck

I. Pressman

I. Reichstein

W. Romo

R. Wightman

General Information

The Integrated Science Studies (ISS) program offers undergraduate students in the Faculty of Science the opportunity to develop an individualized program that blends a concentration in Science with a linked area of specialization in another faculty. A student whose academic aspirations cannot be satisfied within the constraints of one of the many programs offered by the Faculty of Science may apply to the Integrated Science Studies program and describe the program that he or she would choose to pursue. If the proposal is intellectually coherent and satisfies the academic constraints of the Integrated Science Studies Program, the student will be admitted to ISS and will be permitted to follow the program that has been approved.

The program requires that a student select an area of concentration within Science: physical sciences, environmental sciences, life sciences, behavioral sciences, or mathematics and statistics, in order to acquire a depth of understanding of the particular discipline, its workings and its significance. In the associated specialty area outside of the Faculty of Science, a pattern of courses should be selected that provides the student with a concomitant, integrated understanding. Students are urged to be creative and bold in their planning, but should consult with a member of the ISS Committee for advice or assistance before applying for admission to the Integrated Science Studies program. A detailed list of the proposed courses and a description of the overall program must be submitted by every ISS applicant beyond First year. First-year students must submit their planned program to the ISS Committee before they commence their Second year. The Committee monitors the progress of all ISS students.

An Honours program and a Major program are available for ISS students. Both require a course of Independent Study as an important part of the program (Integrated Science 60.498, 60.399*).

This program is suitable for part-time students and mature students. Students in ISS may be eligible to transfer into co-op or work-study programs sponsored by other Departments in the Faculty of Science,

provided they meet all the prerequisites and grade requirements. ISS students are advised to familiarize themselves with the particular rules of the Faculty of Science that apply to them.

Many different specific program combinations have been adopted in the past. Possible combinations available within the program are included here for illustrative purposes, but the following does not constitute an exhaustive list:

biology and psychology, e.g. neuroscience, nutrition plus behaviour;
biotechnology and business, e.g. genetic engineering and management;
chemistry/biochemistry and business, e.g. pre-pharmacy;
ecology and management, e.g. resource management, conservation;
environmental sciences (i.e. biology, chemistry, geography, earth sciences, physics, statistics), e.g. pollution, acid rain, climate studies, sustainable development;
geography, sciences and anthropology, e.g. archaeological sciences;
life sciences (biology, chemistry, biochemistry) and social sciences, e.g. pre-medical studies, pre-dentistry;
operations research/mathematics and business, e.g. management science;
physical geography and civil engineering, e.g. soil sciences;
physics and psychology, e.g. perception;
physics and geography and computer science, e.g. remote sensing;
psychology and computer science, e.g. artificial intelligence, user interfaces;
science and engineering, e.g. bioengineering, instrumentation, ergonomics;
science and journalism, e.g. science writing, editing reporting;
science and foreign languages/linguistics, e.g. translation, interpreting;
statistics and economics and business and law, e.g. actuarial sciences.

Admission Requirements

Application for admission to the program is made on an application form available from the Office of Registrarial Services. The admission requirements for these programs are those specified for the B.Sc Major and Honours degrees. (See p. 408.) Before seeking formal admission to the program, students are advised to consult with the Chair for assistance in formulating an application proposal and a coherent set of courses that will meet the objectives of the student and fulfil Calendar requirements.

Course Requirements

First Year

The First-year program consists of 5.0 credits approved for a First-year Science program including:

- Mathematics 69.107* and 69.117*;
- 2.0 experimental Science credits chosen from two of: Biology, Chemistry, Geology, Physics;

(c) 2.0 additional credits chosen from Science, Mathematics, Arts, Social Sciences, Computer Science (except Computer Science 95.100★ or 95.101★) or Engineering.

In establishing their First-year program, students should consult with the Chair of the Integrated Science Studies program or a member of the committee to ensure that they register for appropriate courses.

Major Program

Although programs are planned and approved on an individual basis, the general framework of regulations is specified. The program, under the direction of the Integrated Science Studies Committee, consists of 15.0 credits, 10.0 beyond First year including:

1. 6.0 credits selected from the Faculty of Science above the 100-level, including Integrated Science 60.399★; 2.0 of the Science credits must be at the 300- or 400-level; the foregoing credits are designated as the Science sequence;
2. 3.0 credits in an inter-related specialized area selected from outside the Faculty of Science; these credits are designated as the non-Science sequence.

At least 2.0 credits must also be chosen from the Faculties of Arts or Social Sciences.

At least 8.0 credits must also be at the 200-level or higher. In this program, all Technology, Society, Environment Studies courses are considered Non-Science credits.

Honours Program

The program, under the direction of the Integrated Science Studies Committee, consists of 20.0 credits, 15.0 beyond First year including:

1. 9.0 credits selected from the Faculty of Science above the 100-level, including Integrated Science 60.498; 4.0 of the Science credits must be at the 300- or 400-level; the foregoing courses are designated as the Science sequence;
2. 4.0 credits in an inter-related specialized area selected from outside the Faculty of Science; these credits are designated as the Non-Science sequence.

At least 2.0 credits must also be chosen from the Faculties of Arts or Social Sciences.

At least 13.0 credits must be at the 200- or higher level. In this program, all Technology, Society, Environment Studies courses are considered Non-Science credits.

Graduation

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 106), in addition to the Committee regulations and requirements.

Major Program

To qualify for graduation a student must satisfy the normal requirements of the Faculty and have GPAs of 4.0 or better in the Science sequence (6.0 credits), the Non-Science sequence (3.0 credits), and overall

(15.0 credits). The last 5.0 credits taken normally will include at least 1.0 credit from each of the Science and Non-Science sequences.

Honours Program

To qualify for graduation a student must satisfy the normal requirements of the Faculty and have GPAs of 6.5 or better in both the Science sequence (9.0 credits) and the Non-Science sequence (4.0 credits) as well as an overall GPA of 5.0 or better (20.0 credits). The class of Honours degree will be determined following general Faculty regulations (p. 413) using all 13.0 credits in the Science and Non-Science sequences to calculate the Honours GPA.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Integrated Science 60.399★

Independent Study

The student must have the agreement of a member of the University faculty to supervise the project. The student is responsible for filing an outline of the proposed project (which includes an indication of the methods to be used, and which has been written in consultation with the adviser), with the Integrated Science Studies Chair not later than three weeks after registration in the course. A final report must be prepared and submitted in two copies, one to the project adviser and one to the Chair of the Committee, by the last day of classes of the term in which the student is registered. This course is normally open only to Integrated Science Studies students. Students must demonstrate the integrative or interdisciplinary nature of their proposed study.

Prerequisites or co-requisite: At least 0.5 credit at the 300-level or better and permission of the Committee.

Integrated Science 60.498

Honours Project

A project is carried out by the student in consultation with a faculty adviser. The project must be approved by the adviser's department and by the Chair of the Integrated Science Studies program. A written outline of the proposed study, approved by the adviser, must be submitted to the Chair of the Committee not later than three weeks after registration in the course. A progress report must be submitted to the adviser and the Chair by the first day of classes in the Winter term. Three copies of the final written report shall be prepared and submitted by the last day of Winter term classes, one each for the project adviser, an Integrated Science Studies Committee member, and a third reader, who has some familiarity with the project area. An oral report normally will be required at the conclusion of the project. The project is the equivalent of one credit, with an average of eight hours of work per week. An "In Progress" grade will not be given for work not meeting the deadlines except in unusual circumstances and with the approval of the Committee Chair. The fulfilment of these requirements is the responsibility of the student.

(Arts)

1315 Dunton Tower
Telephone: 520-2108

Academic Administration

Chair

W. Anselmi

Supervisors of Undergraduate Studies

F. Loriggio

C. Persi Haines

Teaching Staff

Associate Professors

F. Loriggio

C. Persi Haines

Assistant Professors

W. Anselmi

G. Panico

Visiting Lecturer

Salvatore Aronica*

(*with the support of the Embassy of Italy)

General Information

The Department of Italian offers a varied and flexible undergraduate program, which has been designed to comply with a range of academic and professional interests. The program offers courses and tutorials in language, literature and cultural studies, and it includes some options for translation training.

The Italian Studies program was redesigned in 1993-94. Changes were implemented in the 1994-95 academic year. Students enrolled in an Italian Studies degree program before 1994-95 should direct their enquiries to the Pass or Honours supervisors before registration. Students who intend to enter an Italian Studies degree program are advised to contact the Department in order to establish their course of studies.

In addition to the redesign of its existing programs, the Department of Italian, in collaboration with the Italian section of the Department of Modern Languages and Literatures of the University of Ottawa, has developed an Honours program in Italian Studies to be offered jointly by the two universities. Thus, beginning from the 1994-95 academic year, the following options are available to students wishing to enter an Italian Studies program: Combined Pass, Pass, Combined Honours, and Honours. Some courses required for the above degrees will be offered, on a rotating basis, at both campuses. Students should note that the courses offered at Carleton University are full courses, while the courses offered by the University of Ottawa are half courses. However, when taking courses offered at the University

of Ottawa, both Carleton and University of Ottawa students who are enrolled in a degree program in Italian Studies must complete *both halves* of a course that is required towards the completion of the program.

Departmental Reading List

Reading lists will be available and will provide additional information about courses, including texts, instructors and, as available, the scheduling of courses.

Intensive Course

Students beginning the study of Italian at Carleton University and who are considering declaring Italian Studies as a major, should take note of Italian 26.180 Intensive Italian (2.0 credits). This course is designed to enable students to reach, in one year, the linguistic competence normally acquired in two years. When offered at Carleton University, this course is also available to students not majoring in Italian Studies.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Program Requirements

The minimum credit requirements for a degree in Italian Studies are as follows: Combined Pass: 6.0; Pass: 7.0; Combined Honours: 8.0; Honours: 11.0.

For students with prior knowledge of Italian, the introductory language acquisition course 26.100, may be waived, with a corresponding reduction of 1.0 credit, in the Italian requirements of any of the above mentioned programs. While other language acquisition courses beyond 26.100 may also be waived, they must, in consultation with the Department, be replaced with a corresponding number of credits in language, literature or culture.

Students with prior knowledge of Italian should contact the Department before registration so that their level of linguistic competence can be assessed.

All language acquisition courses involve individual or group assignments, and/or laboratory work.

Core Program

The Core Program must include the following courses:

26.100 Introductory Italian (or 26.170 Italian for Italophones)

and

26.200 Intermediate Italian

or

26.180 Intensive Italian (2.0 credits)

- 26.250 Introduction to the Study of Italian Literature
 26.300 Advanced Italian
 26.360 Themes and Issues in Italian Culture
 Total Credits: 5.0

Combined Pass

Core Program and *one* of the following:

- 26.262 Italian Heritage in North America
 26.350 Italian Literature: Periods, Movements and Genres (1250-1650)
 26.352 Italian Literature: Periods, Movements and Genres (1650-1990)
 26.354 Themes in Italian Literature
 Total credits: 6.0

Pass Program

Core Program and *two* of the following:

- 26.262 Italian Heritage in North America
 26.350 Italian Literature: Periods, Movements and Genres (1250-1650)
 26.352 Italian Literature: Periods, Movements and Genres (1650-1990)
 26.354 Themes in Italian Literature
 26.380 Writing Workshop in Italian
 Total Credits: 7.0

Combined Honours

Core Program

- 26.380 Writing Workshop in Italian,
 and *two* of the following (one of which must be at the 400 level):

- 26.262 Italian Heritage in North America
 26.350 Italian Literature: Periods, Movements and Genres (1250-1650)
 26.352 Italian Literature: Periods, Movements and Genres (1650-1990)
 26.354 Themes in Italian Literature
 26.400 Italian Language: Special Topics
 26.450 Italian Literature: Special Topics
 26.460 Italian Culture: Interdisciplinary Perspectives
 26.480 Translation
 Total Credits: 8.0

Honours Program

Offered jointly with the University of Ottawa

Core Program

- 26.380 Writing Workshop in Italian,
 and *five* of the following (two of which must be at the 400 level):

- 26.262 Italian Heritage in North America
 26.350 Italian Literature: Periods, Movements and Genres (1250-1650)
 26.352 Italian Literature: Periods, Movements and Genres (1650-1990)
 26.354 Themes in Italian Literature
 26.400 Italian Language: Special Topics
 26.450 Italian Literature: Special Topics
 26.460 Italian Culture: Interdisciplinary Perspectives
 26.480 Translation
 26.490 Directed Studies
 Total Credits: 11.0

Undergraduate students registered in the Joint Honours Italian Studies Program at one university may register in courses at the other to be credited to their degree.

1. Students registered in the first year of the Joint Program at their home university may register in Italian courses at the other university.

2. Students in the Joint Program who are on probation at their home university may continue to take Italian courses at the other.

3. Although there is no limit on the number of Italian courses taken at either university, students must fulfil their university's residence requirements of 5.0 (Carleton) / 30.0 (Ottawa) credits.

4. Only those courses which are part of the student's program (required or optional) will be accepted within the terms of the Joint Program.

5. Students registered in the Joint Program and wishing to take courses other than Italian at the other university must do so under the terms of the Ottawa-Carleton Exchange Program.

6. Final grades obtained in courses taken at the other university within the Joint Program will be recorded on the student's official record.

Students should note that enrolment in the Joint Honours Italian Studies Program is limited.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Italian Language Acquisition Courses

Students must read and follow the *Guidelines for Choosing Italian Language Courses*, included in the *Registration Instructions and Class Schedule* booklet.

Before selecting a language acquisition course, students should note that there are three levels in language courses and the following sequence applies:

- Level 1** 26.100 or 26.170
 26.180 (2.0 credits)
Level 2 26.200
Level 3 26.300

Students cannot go backwards in the sequence of level.

Italian 26.180 is an intensive course (2.0 credits), which covers in one year the first and second level.

University of Ottawa-Carleton University Collaboration

The language acquisition courses 26.100, 26.170, 26.200 and 26.300 are offered each year at both Carleton and the University of Ottawa. The other courses alternate each year between the two universities.

University of Ottawa course numbers corresponding to Carleton numbers are listed in parentheses.

Italian 26.100 (1911/1912)

Introductory Italian

A course designed to introduce the student to the acquisition of Italian. Understanding, speaking, reading and writing.

Precludes additional credit for Italian 26.170, 26.180, and 26.101★/26.102★ (no longer offered).

Lectures and language practice three hours a week and one hour practice in the laboratory.
No prerequisites.

Italian 26.150

The Italian Tradition in Literature

Selected reading of some of the major figures of Italian literature. Such authors as Dante, Boccaccio, Petrarca, Machiavelli, Goldoni, Leopardi, Manzoni, Verga, D'Annunzio, Pirandello, Svevo, Moravia, Pasolini, Calvino, Fo, will be included in the reading list. All texts will be read in translation. No knowledge of Italian is required. This course, offered as an Arts option, cannot be counted towards a Pass or an Honours degree in Italian Studies.

Language of instruction: English.

Lectures and discussion three hours a week.

No prerequisites.

Italian 26.160 (2105/2106; F2505/2506)

Introduction to Italian Culture

The course will focus on the major phases of Italian social and intellectual history. Literary as well as non-literary texts will be included in the reading list. All texts will be read in translation. No knowledge of Italian is required. This course, offered as an Arts option, cannot be counted towards a Pass or an Honours degree in Italian Studies.

Language of instruction: English.

When taken at the University of Ottawa, this course will count as a first-year course.

Precludes additional credit for Italian 26.260 (no longer offered).

Lectures and discussion three hours a week.

No prerequisites.

Italian 26.170

Italian for Italophones

Designed to meet the needs of students of Italian origin and/or speakers of a community language or a dialect, wishing to retrieve standard Italian or to add standard Italian to their linguistic repertoire.

Precludes additional credit for Italian 26.100, 26.180, and for 26.101★ and 26.102★ (no longer offered).

Prerequisites: Some knowledge of an Italian dialect or of a community language.

Lectures and language practice three hours a week and one hour practice in the laboratory.

Italian 26.180 (1021/2021)

Intensive Italian (2.0 credits)

An intensive course designed to accelerate the acquisition of Italian. Intended for students with no previous knowledge of Italian who wish to obtain in one year the linguistic competence usually acquired in two years. Students unable to meet the demands of an intensive approach may be transferred to Italian 26.100, Introductory Italian, or Italian 26.170, Italian for Italophones.

Precludes additional credit for Italian 26.100, 26.170, 26.200, and 26.101★ and 26.102★ (no longer offered).

Lectures and language practice six hours a week and two hours practice in the laboratory.

Italian 26.200 (2911/2912)

Intermediate Italian

A sequel to Introductory Italian. Speaking, reading, writing, understanding, and using the language as a means for self-expression. A course intended to lead to the comprehension and enjoyment of Italian texts. Precludes additional credit for Italian 26.180.

Prerequisites: Italian 26.100 or Italian 26.170 and 26.101★ and 26.102★ (no longer offered) or permission of the Department.

Lectures and language practice three hours a week and one hour practice in the laboratory.

Italian 26.250 (2927/2928)

Introduction to the Study of Italian Literature

Discussion of basic concepts of literary criticism in relation to representative texts from Italian literature. This course must be taken by students that plan to major in Italian Studies.

Precludes additional credit for Italian 26.240 (no longer offered).

Prerequisites: Italian 26.200 or 26.180, or permission of the Department.

Lectures and discussion three hours a week.

Italian 26.262 (2129/2130; F2529/2530)

The Italian Heritage in North America

A critical survey of the Italian-Canadian and Italian-American contribution to Canadian and American culture. Works studied include novels, plays, films and essays. All texts will be read in English. This course may be counted towards a degree in Italian Studies. The language of instruction will be English at Carleton University and English or French at the University of Ottawa.

Precludes additional credit for Italian 26.362 (no longer offered).

Prerequisites: Students enrolled in a Pass or Honours Program must have completed either Italian 26.200 or 26.180.

Lectures and discussion three hours a week.

Italian 26.300 (3911/3912)

Advanced Italian

A sequel to Intermediate Italian. Defined points of grammar, style, composition; conversation and some translation. A course designed to perfect the command of Italian.

Prerequisites: Italian 26.200 or 26.180, or permission of the Department.

Lectures and language practice three hours a week and one hour practice in the laboratory.

Italian 26.350 (3952/3953)

Italian Literature: Periods, Movements and Genres (1250-1650)

Designed for students wishing to complete a degree in Italian Studies. Focus on canon formation, the development of genres, movements and other normative aspects of literary history. As least two different periods will be examined each year.

Precludes additional credit for Italian 26.340 (no longer offered).

Prerequisite: Italian 26.250.

Lectures and discussion three hours a week.

Italian 26.352 (3954/3955)

Italian Literature: Periods, Movements and Genres (1650-1990)

Designed for students wishing to complete a degree in Italian Studies. Focus on canon formation, the development of genres, movements and other normative aspects of literary history. At least two different periods will be examined each year.

Precludes additional credit for Italian 26.342 (no longer offered).

Prerequisite: Italian 26.250.

Lectures and discussion three hours a week.

Italian 26.354 (3956/3957)

Themes in Italian Literature

Designed for students wishing to complete a degree in Italian Studies. The course examines specific themes and issues pertaining to a particular period, genre or movement.

Prerequisite: Italian 26.250.

Lectures and discussion three hours a week.

Italian 26.360 (3958/3959)

Themes and Issues in Italian Culture

Designed for students wishing to complete a degree in Italian Studies. The course examines issues concerning the development of Italian culture from the Thirteenth century to the Twentieth century. Topics may vary from year to year. Topic for 1996-97: La cultura del 'pubblico' e 'privato' nel Medioevo e nel Rinascimento.

Prerequisites: Italian 26.200 or 26.180, or permission of the Department.

Lectures and discussion three hours a week.

Italian 26.380 (3950/3951)

Writing Workshop in Italian

Emphasis on the development of reading and writing skills. Written discourse as a means of communication; intensive practice in writing; analysis of errors in grammar and style. This course is required for students in the Combined Honours or Honours program.

Prerequisites: Italian 26.200 or 26.180, or permission of the Department.

Lectures and writing practice three hours a week.

Italian 26.400 (4901/4902)

Italian Language: Special Topics

The course will examine issues pertaining to the development of the Italian language.

Prerequisites: Italian 26.300 or permission of the Department.

Lectures and discussion three hours a week.

Italian 26.450 (4905/4906)

Italian Literature: Special Topics

A study of an Italian author, movement or theme. Topic for 1996-97: "Esistenza" e "coscienza" della piccola borghesia italiana nel teatro moderno e contemporaneo.

Prerequisites: A 300-level literature course or permission of the Department.

Lectures and discussion three hours a week.

Italian 26.460 (4903/4904)

Italian Culture: Interdisciplinary Perspectives

This course will study periods or aspects of Italian culture from the point of view of the relation between literature and the other arts or disciplines.

Prerequisites: Italian 26.360 or permission of the Department.

Lectures and discussion three hours a week.

Italian 26.480 (4907/4908)

Translation

This course deals with the general principles as well as with the particular problems of translation from and into Italian. Practice with literary and non-literary texts.

Precludes additional credit for Italian 26.403* (no longer offered).

Prerequisites: Italian 26.300 or permission of the Department.

Lectures and translation practice three hours a week.

Italian 26.490 (4929/4930)

Directed Studies

Open to students enrolled in an Honours program in Italian Studies. Individual tutorial on a selected topic chosen by the student in consultation with the Department.

Prerequisites: B+ standing in Italian and permission of the Department.

(Arts)

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General Information

Bachelor of Journalism Honours Program

The School of Journalism and Communication offers the degree of Bachelor of Journalism with Honours. The program is designed to provide a thorough education in journalism based on three components: professional courses designed to instill and assess the skills of journalism; academic courses to guide inquiry into the nature and conduct of the news media; and University education in disciplines outside the School. Students will be trained in the skills of gathering, assessing and presenting information in various media. They will also be educated so as to be able to make informed and considered judgments, both about news media practices and about the subject on which they bring their journalistic attentions to bear. Advantage is taken of the many resources outside the University provided by Carleton's location in the national capital.

Students who already hold an undergraduate degree in another field are not eligible to apply for the B.J. (Hons.) program. These students should consult the information on the Master of Journalism or the Master of Arts in Communication in the Faculty of Graduate Studies and Research Calendar.

Bachelor of Arts in Mass Communication

The School of Journalism and Communication offers Pass and Honours Arts undergraduate programs in Mass Communication. (See p. 379.)

Graduate Programs

The School of Journalism and Communication offers the Master of Journalism degree and a Master of Arts in Communication. For further details consult the *Faculty of Graduate Studies and Research Calendar*.

Bachelor of Journalism Honours Four-Year Program

Program Requirements

In 1995-96, the School introduced a revised Bachelor of Journalism curriculum to address ongoing changes in the practice of journalism. **Students who entered First Year of the program in 1995-96 or later are subject to the Revised Program Requirements below. Students who entered First Year prior to 1995-96, or students who transferred into Second Year of the Journalism program in 1995-96 are subject to the old Program Requirements outlined on p. 353.**

Revised Program Requirements

Candidates admitted to First Year of the B.J. program in 1995-96 or later take a total of 20.0 credits, normally in this sequence:

First Year
Journalism 28.100;
4.0 approved optional credits

Second Year

Journalism 28.221, 28.225★, 28.251★

3.0 approved optional credits

Third Year

Journalism 28.325, 28.326

3.0 approved optional credits

Fourth Year

28.400; 28.421; two of 28.425★, 28.426★, 28.427★ and 28.428★.

2.0 approved optional credits

Note:

No more than two of 28.425★, 28.426★, 28.427★ and 28.428★ may be taken and cannot be taken simultaneously. No course may be taken more than once.

Prior to graduation, as part of their optional courses, students must complete a French language credit. Acceptable 100-level French courses are any of French 20.120, 20.130, 20.140 and 20.150. Students should be aware that the Department of French offers sections of French 20.150 and two senior courses, 20.210 and 20.310, specifically for Journalism students. Those who already have capacity in French may fulfill this requirement by passing a language test administered on an *ad hoc* basis by the Department of French, but will be required to take an approved optional credit. Students who have completed French Immersion in High School, or who have obtained a Bilingual Diploma or Certificate will be regarded as having met this French language requirement, but will be required to take an approved optional credit. Students from abroad whose mother tongue is other than English, or students whose research interests require another language, may obtain permission from the Supervisor of Undergraduate Studies to substitute this language for French.

In addition, before graduation students must take 1.0 approved credit in Canadian history, normally History 24.130, 24.233, 24.234 or 24.235. Students who expect to practice journalism in another country may be advised to choose a different history course and must seek written permission to do so from the Supervisor of Undergraduate Studies (Journalism).

Finally, students should be aware of the School's requirement that, before graduation, 5.0 credits must be taken in a field other than Journalism, with at least 1.0 of these credits at the 300-level or higher.

**Combined Honours in Revised Program
(for students who entered first year in 1995-96 or later)**

Honours programs may be taken by students in the four-year undergraduate program in which Journalism is combined with other disciplines. Such programs are available with the following subjects: Economics, English, French, Mass Communication, Political Science, Law, Philosophy, Sociology and Women's Studies. Details of the specific requirements for those programs may be obtained from the Department concerned. Special arrangements may be made for other combinations in consultation with the Supervisor of Undergraduate Studies (Journalism). The minimum requirements are normally the same as those for the Bachelor of Journalism with

Honours, with the exception that those students seeking the Bachelor of Arts with Honours must write their graduating research paper in that other Arts department. **Combined Honours programs in Journalism and other disciplines are available only to students registered in Journalism.** Students seeking further information about program requirements should consult *A Guide to Combined Honours Programs in Journalism*, available from the School.

Combined Honours, Journalism and Philosophy

Course requirements are:

1. Journalism 28.100, 28.221, 28.225★, 28.251★, 28.325, 28.326, 28.400, 28.421, and two of 28.425★, 28.426★, 28.427★, 28.428★;
2. 7.0 credits in Philosophy, including an introductory course or equivalent; 6.0 credits beyond the 100-level to include:
 - (a) 2.0 credits in the history of philosophy
 - (b) Philosophy 32.280 or 32.290;
 - (c) 1.0 credit at the 400-level;
3. 1.0 French language credit; acceptable 100-level French courses are any of French 20.120, 20.130, 20.140 and 20.150;
4. 1.0 approved credit in Canadian history. (Students who plan to practice journalism in another country may be advised to choose a different History course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.)
5. Approved options to make up a program of 20.0 credits.

B.J. Honours with a Concentration in Psychology**Note:**

The following course pattern does not constitute a Combined Honours program in Journalism and Psychology.

Course requirements are:

1. Journalism 28.100, 28.221, 28.225★, 28.251★, 28.325, 28.326, 28.400, 28.421 and two of 28.425★, 28.426★, 28.427★ and 28.428★;
2. Psychology 49.100, 49.200, two of 49.210★, 49.220★, 49.230★, 49.250★, 49.260★, 49.270★; 2.0 credits in Psychology chosen in consultation with members of the Department from Psychology courses in the areas of behavioral neuroscience, community and social psychology, perception and cognition, developmental psychology, or personality and assessment; and 1.0 optional credit in Psychology.
3. 1.0 French language credit; acceptable 100-level French courses are any of French 20.120, 20.130, 20.140, and 20.150;
4. 1.0 approved credit in Canadian history. (Students who expect to practice journalism in another country may be advised to choose a different history course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.)
5. Approved options to make up a program total of 20.0 credits.

Old Program Requirements (for students who entered First year prior to 1995-96, and for those students who entered as transfer students into Second Year in 1995-96)

Candidates for the degree of Bachelor of Journalism take a total of 20.5 credits, normally in this sequence:

First Year

Journalism 28.100;

1.0 French language credit*; acceptable 100-level French courses are any of French 20.120, 20.130, 20.140, and 20.150.

3.0 approved optional credits.

*Students should be aware that the Department of French offers sections of French 20.150 and two senior courses, French 20.210 and 20.310, specifically for Journalism students. Those who already have capacity in French may fulfil this requirement by passing a language test administered on an *ad hoc* basis by the Department of French, but will be required to take an approved optional credit. Students who have completed French Immersion in High School, or who have obtained a Bilingual Diploma or Certificate will be regarded as having met this French language requirement, but will be required to take an approved optional credit. Students from abroad whose mother tongue is other than English, or students whose research interests require another language, may obtain permission from the Supervisor of Undergraduate Studies to substitute this language for French.

Students should be aware of the School's requirement that, before graduation, 4.0 credits must be taken in a field other than Journalism, with at least 1.0 of these credits at the 300-level or higher.

Second Year

Journalism 28.200 and 28.220;

1.0 approved credit in Canadian history*, normally History 24.130, 24.233, 24.234 or 24.235;

2.0 approved optional credits.

*Students who expect to practice journalism in another country may be advised to choose a different history course and must seek written permission to do so from the Supervisor of Undergraduate Studies (Journalism).

Third Year

Journalism 28.351★ and 28.320 (Note: Journalism 28.320 is a two-credit course);

3.0 approved optional full credits. These options must include at least one but may include additional Journalism credits. The courses available as options are: Journalism 28.215, 28.300, 28.305★, 28.306★, 28.321★, 28.333, 28.352★, Mass Communication 27.201, 27.280, 27.290, 27.311, 27.355★ and 27.357★. Furthermore, a student registered in a straight Journalism program should continue working toward the School's requirement that, before graduation, 4.0 credits must be taken in a field other than Journalism, with at least 1.0 of these credits at the 300-level or higher.

Fourth Year

Journalism 28.421 and 28.498;

3.0 approved optional credits. Students will note the School's requirement described above regarding non-Journalism courses. The Journalism options offered in Fourth year are Journalism 28.410★, 28.411★ and 28.490.

Combined Honours (for students who entered First year prior to 1995-96, and for those students also entered as transfer students into Second year in 1995-96)

Those students admitted to a Combined Honours program prior to 1995-96 or accepted as transfer students into Second year in 1995-96 are required to complete 20.5 credits, but are excused from the 300- and 400-level Journalism options required for the Honours program. For program requirements of the other participating department, consult the entry for that department. Students seeking further information about program requirements should consult the Calendar for their year of admission, their most recent academic audit, or *A Guide to Combined Honours Programs in Journalism* available from the School.

Admission, Continuation and Graduation

Admission and Continuation

For admission to the First year, students are required to present:

The OSSD, or the equivalent, including six OACs with an average of 65 percent or better; or the successful completion of Qualifying-University year.

Although not required for admission, an OAC in English is recommended.

It should be noted that the number of student spaces in the School is limited. Because of this it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success in the course.

Admission to Second year will be guaranteed only to First-year Journalism students who achieve a B+ or better in Journalism 28.100 and a CI of 8.00 in First year on 5.0 full credits. For information on calculation of the CI, refer to p. 78.

The School also maintains a number of places in Second year for students who wish to transfer from Carleton or elsewhere. Normally, offers are made to students with an overall GPA equivalent to B+ or better.

Students may not continue into 300-level or higher courses without satisfactory standing.

For students governed by the Revised Program Requirements, admission to these courses will be based on a minimum of:

- C standing in Journalism 28.221;
- an average of C+ in the four Journalism courses taken for credit in the first two years: Journalism 28.100, 28.221, 28.225★ and 28.251★;
- an overall GPA of 4.0.

For students governed by the Old Program Requirements, admission to these courses will be based on a minimum of:

- (a) C standing in Journalism 28.220;
- (b) an average of C+ in the three Journalism subjects taken for credit in the first two years: Journalism 28.100, 28.200 and 28.220;
- (c) an overall GPA of 4.0.

Note:

Journalism students must become reasonably proficient in computer keyboarding as soon as possible. Most assignments in the professional Journalism courses are done by computer.

Graduation Requirements

In order to graduate, students under both the old and revised regulations must fulfil all University regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all School regulations.

In addition to the graduation requirements of the Faculty of Arts, a candidate for the degree of Bachelor of Journalism with Honours must have a C+ average in the Journalism courses, with C or better in the reporting courses, a C- or better in each other Journalism course, and be recommended for graduation by the School.

If, after the regular examinations in any year, a student is below the standard, grades must be raised in the appropriate subjects by writing grade-raising examinations.

Courses offered under Old Program Requirements

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Journalism 28.100

Introduction to Journalism Studies

An introduction to the writing skills required for the practice of journalism, and an outline of its social and philosophical contexts. In the first term, the basics of journalistic literacy and writing with an explanation of journalistic style according to the current style guides will be studied. In second term, an introduction to the social and philosophical contexts of journalism will be followed by an outline of its development in Europe, the United States and Canada. Lectures, readings and tutorials will provide an opportunity for both reflection and practice.

Prerequisite: For Journalism Honours students only. Lectures and discussion three hours a week.

Journalism 28.216★

The Documentary

This course examines the work of individual film makers, of documentary styles, and of organizations and institutions in the context of the history of documentary film making, including documentaries made

for television. Non-fiction films other than documentaries may be considered. (Also listed as Film Studies 19.216★.)

Precludes additional credit for Journalism 28.215 (Film Studies 19.215) (no longer offered).

Prerequisite: Film Studies 19.100 or permission of the School.

Lectures and screening two hours, two days a week.

Journalism 28.300

The Modern Environment

A seminar course for Journalism students in which a number of texts drawn from the social sciences, literature, journalism and philosophy are considered for their contributions to an understanding of contemporary society and the issues that provide the background to much of contemporary journalism.

Prerequisite: Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Seminar three hours a week.

Journalism 28.305★

International Media Systems

This course is concerned with the flow of world news — how it is collected, transmitted, received, selected, edited and distributed; how it informs or inhibits our views of the world around us. It examines the relationship and dependence of Canadian media on regional and international institutions and systems. It examines such items as media systems; the role of international news agencies; the role of global telecommunication systems; the foreign news-gathering operations of national radio and television networks, and the inter-network arrangements for news distribution; the role of supranational media institutions such as UNESCO, the International Press Institute, the Inter-American Press Association and the International Organization of Journalists; the role of regional distribution agencies such as Intervision, Eurovision, European Broadcasting Union, Asian Broadcasting Union. (Also listed as Mass Communication 27.305★.)

Prerequisite: Mass Communication 27.211 or Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Lectures and discussion three hours a week.

Journalism 28.306★

Comparative Media Studies

This course is concerned with comparisons of media content, organization or operation. Comparisons may be cross-cultural in nature (i.e. comparisons of English and French-Canadian media content), cross-media (i.e. comparisons of broadcast and print media organizations), cross-national (i.e. comparisons of media operations in various countries) or a mixture of these. There may also be comparisons over time. Some time is spent examining and employing research tools and methods used in these studies. (Also listed as Mass Communication 27.306★.)

Prerequisite: Mass Communication 27.211 or Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Lectures and discussion three hours a week.

Journalism 28.315★

Questions of Documentary Practice

This course examines the theoretical implications of documentary film and documentary television prac-

tice. (Also listed as Film Studies 19.315★.)

Prerequisite: 1.0 credit or its equivalent in Film Studies at the 200-level, or permission of the School.

Journalism 28.320 (2 credits)

Advanced Reporting and Editing

The course covers advanced work in TV, radio and print media. Under staff supervision, students report and edit for a community newspaper, report and produce for radio news and television news, and engage in depth reporting.

Prerequisite: Journalism 28.220.

Workshops. Hours vary throughout the year; consult University Class Schedule.

Offered for the last time in 1996-97.

Journalism 28.321★

Career Seminars

An opportunity for the student to specialize by doing work in such areas as television, radio, magazines, public relations, creative writing, editorial writing, freelancing, the film, or reporting in the French language. Certain of these specialties may not be offered in a given year.

Prerequisite: For Third- and Fourth-year students only.

Note: Students may not obtain credit for more than one section of 28.321★.

Lectures and practicum two hours a week.

Offered for the last time in 1997-98.

Journalism 28.333

Film and Society

An examination of film in relation to social and intellectual developments of the twentieth century. The ways in which the cinema has both shaped and been shaped by some of these developments are considered. (Also listed as Film Studies 19.333.)

Prerequisite: 1.0 credit or its equivalent in Film Studies at the 200-level, or permission of the School.

Screening three hours a week, lecture one hour a week.

Journalism 28.351★

Communications Law I

This course is concerned with the general laws governing the mass media in Canada with attention to their effect on freedom of expression. Specific topics for examination include: the development of freedom of expression and of the press in Canadian constitutional law, including the effects of the Charter of Rights and Freedoms; statutory limits on freedom of expression and of the press; contempt of court; civil defamation; and privacy. (Also listed as Law 51.351★ and Mass Communication 27.351★.)

Prerequisite: Journalism 28.100, Law 51.100 or Mass Communication 27.111 or permission of the School.

Lectures and discussion three hours a week.

Offered for the last time in 1996-97.

Journalism 28.352★

Communications Law II

The law as it affects the Canadian broadcasting and communications industry. The primary focus of the course is on the operations of the Canadian Radio-Television and Telecommunications Commission. Specific topics for examination may include: administrative formulation of policy; multiple, monopoly and foreign ownership; control of program content (vio-

lence, obscenity, "good taste," food and drug commercials, liquor advertising, indirect censorship); controlling program quality; the provision of a right of access to the media; cablevision licensing and control; alternative sanctions. (Also listed as Law 51.352★ and Mass Communication 27.352★.)

Prerequisite: Journalism 28.100, Law 51.100 or Mass Communication 27.111 or permission of the Department of Law.

Lectures and discussion three hours a week.

Journalism 28.410★

Special Topic

An examination of a topic in journalism not covered in depth in other courses. Topics may change from year to year.

Seminar three hours a week.

Journalism 28.411★

Special Topic

An examination of a topic in journalism not covered in depth in other courses. Topics may change from year to year.

Seminar three hours a week.

Journalism 28.421

Specialized Reporting

An opportunity for students to specialize by acquiring background and undertaking assignments in all media in various specialized areas, such as science and technology, business and finance, sports, the arts, international affairs, Canadian politics and government, social welfare. Certain of these specialties may not be offered in a given year.

Prerequisite: Journalism 28.320.

Offered for the last time in 1997-98.

Journalism 28.437★

Gender and the Journalist

Using theoretical and textual analysis, this course examines the roles that social concepts of gender have played in several of the following areas: journalism history, journalistic expression and professional practice, professional status, cultural representations and expectations of the journalist, and the alternative or specialized media. It will also consider how gender issues have interconnected with others, such as race and class, contributing to more complex interpretations of the key players, issues and events in the news and the profession.

Prerequisite: Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Seminar three hours a week.

Journalism 28.490

Honours Tutorial

Students are asked to analyze some of the major achievements in contemporary journalism. They work individually and in groups in presenting research papers. Students are also given the opportunity to acquire background and experience in the managerial aspects and production of print and broadcast journalism.

Prerequisite: Fourth-year B.J. (Hons.) standing.

Journalism 28.498

Honours Research

Students in this course have to carry out directed research and prepare a project under faculty super-

vision. The deadline for completion of the Honours research project is April 1.

Prerequisite: For B.J. Honours students only.*
Offered for the last time in 1997-98.

*Students should refer to general Faculty of Arts regulations regarding submission of Honours Essays (p. 76).

Courses offered under the Revised Program Requirements, starting in 1996-97

Journalism 28.221

Fundamentals of Reporting

An introduction to the techniques of news gathering, the standard rules of news and feature writing, elements of news judgment, interviewing skills, a sense of narrative, and ethical reflection.

Precludes additional credit for Journalism 28.220 (last offered 1995-96).

Prerequisite: For Second-year Honours Journalism students and students who transfer into the program. Lectures, discussion and practicum four hours a week.

First offered in 1996-97.

Journalism 28.225★

Journalism's View of the Languages and Institutions of Public Life

This course is an introduction to political culture for reporters, and includes an examination of how journalists interact with institutions such as government, political parties, and major federal institutions; federal-provincial relations; the demography of Canada; basic statutes such as the Constitution and the Charter of Rights and Freedoms; the economy; the health system; the arts community; education and the like.

Prerequisite: For Second-year Honours Journalism students and students who transfer into the program. Lectures and discussion three hours a week.

First offered in 1996-97.

Journalism 28.251★

Communications Law I

A survey of the general laws that affect the mass media in Canada and how they impact on freedom of expression and of the press. Specific areas of examination include the development of freedom of expression in Canadian constitutional law, the impact of the Charter of Rights and Freedoms, statutory limits on freedom of the press, contempt of court and civil defamation. (Also listed as Mass Communication 27.251★.)

Precludes additional credit for Journalism 28.351★, Mass Communication 27.351★ or Law 51.351★ (last offered 1996-97).

Prerequisite: Journalism 28.100 or Mass Communication 27.111 or permission of the School.

Lectures and discussion three hours a week.

First offered in 1996-97.

Journalism 28.325

Intermediate Reporting

The course will enhance students' skills in information-gathering, news and feature writing, story development, news judgment, computer-assisted reporting, interviewing skills and ethics.

Precludes additional credit for Journalism 28.320 (last offered 1996-97).

Prerequisite: Journalism 28.221.

Lectures and practicum three hours a week.

First offered 1997-98.

Journalism 28.326

Introduction to Broadcast Journalism

An introduction to the principles and practices of broadcast reporting. In this practical course students will produce journalistic reports for television and radio. Students will also begin producing newscasts. Precludes additional credit for Journalism 28.220 (last offered 1995-96).

Prerequisite: Journalism 28.221.

Lectures and practicum three hours a week.

First offered 1997-98.

Journalism 28.400

Theoretical and Critical Aspects of Journalism

This course will offer a theoretical overview of the news media in Canada, and the conditions under which they operate. It will study critiques of the media, including ethics.

Precludes additional credit for Journalism 28.200 (no longer offered).

Prerequisite: For Fourth-year Honours Journalism students.

Lectures and discussion three hours a week.

First offered in 1998-99.

Journalism 28.421

Specialized Reporting

A combined seminar and workshop giving students the opportunity to specialize by acquiring background and doing assignments in an area of public affairs such as Canadian politics and government, international issues, the arts, economic issues, science and technology, social issues, sports. The emphasis will be on explanatory/analytical reporting, culminating in an extended piece of journalism in any medium (resources permitting) conforming to high professional and academic standards. Some specialties may not be offered in a given year.

Prerequisites: Journalism 28.325 and 28.326.

Lectures, discussion and seminars three hours a week.

First offered in 1998-99.

Journalism 28.425★

Professional Practices: Newspaper Publishing

A workshop course designed to give students instruction in community newspaper publishing.

Prerequisite: For Fourth-year B.J. (Hons.) students only.

Note:

No more than two of 28.425★, 28.426★, 28.427★ and 28.428★ may be taken and cannot be taken simultaneously. 28.425★ may not be repeated.

Workshops averaging eight hours a week.

First offered in 1998-99.

Journalism 28.426★

Professional Practices: Radio News and Current Affairs

A workshop course designed to give students instruction in radio news and current affairs.

Prerequisite: For Fourth-year B.J. (Hons.) students only.

Note:

No more than two of 28.425★, 28.426★, 28.427★ and 28.428★ may be taken and cannot be taken simultaneously. 28.426★ may not be repeated.

Workshops averaging eight hours a week.

First offered in 1998-99.

Journalism 28.427★

Professional Practices: Television News and Current Affairs

A workshop course designed to give students instruction in television news and current affairs.

Prerequisite: For Fourth-year B.J. (Hons.) students only.

Note:

No more than two of 28.425★, 28.426★, 28.427★ and 28.428★ may be taken and cannot be taken simultaneously. 28.427★ may not be repeated.

Workshops averaging eight hours a week.

First offered in 1998-99.

Journalism 28.428★

Professional Practices: Specialized Media

A workshop course designed to give students instruction in a specialized area such as radio documentary, video documentary, film documentary, editing, magazine writing, photojournalism. Not all specialties will be offered each year.

Precludes additional credit for Journalism 28.321★ (last offered in 1997-98).

Prerequisite: For Fourth-year B.J. (Hons.) students only.

Note:

No more than two of 28.425★, 28.426★, 28.427★ and 28.428★ may be taken and cannot be taken simultaneously. 28.428★ may not be repeated.

Lecture and practicum two hours a week.

First offered in 1998-99.

In addition, students should consult course descriptions for Journalism 28.100, 28.216★, 28.300, 28.305★, 28.306★, 28.315★, 28.333, 28.410★, 28.411★, 28.437★, 28.490 shown above, which will continue to be offered in the new program.

(Social Sciences)

C473 Loeb Building
Telephone: 520-3690

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K.G. McShane
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J. Blakey
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J. McMunagle
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M. Nixon
G. Pickett
T. Purvis
R. Ramkay
L. Ste. Marie
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K. Webb
I. Zinger

General Information

The Department of Law provides a unique forum for the study of law in an interdisciplinary environment. Emphasis is placed on an approach that views law as a social phenomenon, and that situates the study of legal structures, rules and institutions within their social, economic and political context. Consistent with its location in the Faculty of Social Sciences, the Department of Law is characterized by an approach to the study of law that is firmly rooted in the social science tradition of enquiry.

The Department does not attempt, in any manner, to offer a "pre-law" program for students intending to pursue professional vocational training in law schools. Nor does completion of courses or programs qualify anyone to practice law or give counsel in legal matters. The interdisciplinary and social sciences perspectives on legal issues offered in the Department's courses do serve as valuable background to a wide variety of career pursuits, including professional and administrative areas as well as supporting further academic studies.

The Department of Law offers programs leading to both Pass and Honours degrees in Law. Students may also undertake the study of law in a Combined Pass or Honours program in conjunction with another discipline.

Graduation Regulations

In order to graduate, students must fulfill all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Introduction

Notes:

Students in any Law program cannot include Law 51.231★, 51.232★, Business 42.261★ or 42.262★ towards the fulfillment of their degree requirements, even as options.

Pass Program

The Pass program is governed by the following regulations:

1. A Pass degree in Law requires at least 6.0 but not more than 9.0 Law credits or their equivalent. No credits beyond this maximum permissible total may be counted towards the 15.0 full credits required for the degree. Law credits must conform to the following pattern:

- (a) include Law 51.100 with a grade of C- or better; and
- (b) Two of Law 51.203, 51.204 or 51.205; and
- (c) At least 3.0 additional Law credits, one of which must be at the 300-level or higher.

2. Students must either:

- (a) have taken Law 51.100 or its equivalent, and obtained a grade of C- or better at the time of declaring a Law Major, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Law Major, and obtain a grade of C- or better in Law 51.100.

3. In addition to the Law credits, Pass students must take at least 3.0 additional credits in one other discipline. Students are advised to consult with the Department concerning this regulation.

Note:

This does not apply to students who complete a concentration in Criminology and Criminal Justice.

4. Students in the Pass program must satisfy the general University regulations for Pass programs.

Combined Pass Program

The Combined Pass program is governed by the following regulations:

1. A Combined Pass degree in Law requires at least 5.0, but not more than 7.0 Law credits or their equivalent. No credits beyond this maximum permissible total may be counted towards the 15.0 full credits required for the degree. Law credits must conform to the following prescribed pattern:

- (a) Law 51.100 with a grade of C- or better; and
- (b) Two of Law 51.203, 51.204 or 51.205; and
- (c) At least 2.0 further Law credits, one of which must be at the 300-level or higher.

2. Combined Pass students must either:

- (a) have taken Law 51.100 or its equivalent and obtained a grade of C- or better at the time of declaring a Combined Law Major, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Combined

Law Major, and obtain a grade of C- or better in Law 51.100.

3. Students whose other discipline in a Combined Pass program is in the Faculty of Arts must take at least 1.0 introductory or survey credit in a Social Science discipline. Students are advised to consult with the Department concerning this requirement.

4. Students in the Combined Pass program must satisfy the general University regulations governing B.A. Pass programs.

Honours Program

Note:

For 1996-97, the Department of Law has revised the requirements for the Bachelor of Arts Honours and Combined Honours program. Beginning with the 1996-97 academic year, Law 51.498 (Honours Essay) is no longer required as part of the Honours program, and is also no longer offered as an option.

The Honours program is governed by the following regulations:

1. An Honours degree in Law requires at least 9.0 but not more than 12.0 Law credits or their equivalent. No credits beyond this maximum permissible total may be counted towards the 20.0 full credits required for the degree. Law credits must conform to the following prescribed pattern:

- (a) Law 51.100 with a grade of C+ or better; and
- (b) Law 51.203, 51.204 and 51.205 with an average grade of C+ or better; and
- (c) Law 51.397★; and
- (d) 3.0 additional Law credits at the 400-level or higher; and
- (e) At least 1.5 additional Law credits.

2. Honours students must either:

- (a) have taken Law 51.100 or its equivalent and obtained a grade of C+ or better at the time of declaring a Law Honours, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Law Honours, and obtain a grade of C+ or better in Law 51.100.

3. In addition to the Law credits, Honours students must take at least 3.0 additional credits in one other discipline. Students are advised to consult with the Department regarding this requirement.

Note:

This does not apply to students who complete a concentration in Criminology and Criminal Justice.

4. Students in an Honours program must satisfy the general University regulations for B.A. Honours programs.

Combined Honours Program

Note:

For 1996-97, the Department of Law has revised the requirements for the Bachelor of Honours and Combined Honours program.

Beginning with the 1996-97 academic year, Law

51.498 (Honours Essay) is no longer required as part of the Honours program, and is also no longer offered as an option.

The Combined Honours program is governed by the following regulations:

1. A Combined Honours degree in Law requires at least 6.0 but not more than 9.0 Law credits or their equivalent. No credits beyond this maximum permissible total may be counted towards the 20.0 full credits required for the degree. Law credits must conform to the following prescribed pattern:

- (a) Law 51.100 with a grade of C+ or better; and
- (b) Two of Law 51.203, 51.204 or 51.205 with an average grade of C+ or better; and
- (c) Law 51.397*; and
- (d) 2.0 additional Law credits at the 400-level or higher; and
- (e) At least 0.5 additional Law credit at the 300-level or higher and
- (f) The student may be required to complete an Honours Essay in the other discipline, to meet the requirements of that discipline.

2. Combined Honours students must either:

- (a) have taken Law 51.100 or its equivalent and obtained a grade of C+ or better at the time of declaring a Combined Law Honours, or
- (b) include Law 51.100 or its equivalent in their program immediately after declaring a Combined Law Honours and obtain a grade of C+ or better in Law 51.100.

3. Students whose other discipline in a Combined Honours program is in the Faculty of Arts must take at least 1.0 introductory or survey credit in a Social Science discipline. Students are advised to consult with the Department regarding this requirement.

4. Students in a Combined Honours program must satisfy the general University regulations for B.A. Honours programs.

5. Where the Combined Honours is with the School of Journalism, the degree awarded will be the Honours Bachelor of Journalism with Law. Students are directed to the regulations of the School of Journalism.

Criminology and Criminal Justice Concentration

For details see p. 229.

Off-Campus Courses

Introductory Law courses may be offered off-campus by the Department of Law. The particular course(s) offered and location(s) will be announced well in advance of the period of registration.

Prerequisites

1. Students should note that many Law courses have designated prerequisites. Students who have

not obtained credit for designated prerequisites may be required to withdraw from the applicable course.

2. In some instances permission of the Department may be granted as an alternative to a designated prerequisite. It must not be assumed that such permission will be granted automatically. Further, it may be granted subject to certain conditions, including the fulfillment of preliminary reading requirements or the submission of some written work. Students who have not obtained permission of the Department may be required to withdraw from the applicable course.

Waiver of Prerequisites

The formal requirements can only be waived by express written permission of the Department in exceptional circumstances and on special written application.

Cross-Listed Courses

Students should note that the Department of Law will normally regard a cross-listed course as a credit in the department in which the student registers. Students are advised to consult with the relevant departments before deciding under which department they should register in cross-listed courses.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Law 51.100

Introduction to Legal Studies

An introduction to law and the Canadian legal system. Topics include an examination of the nature and functions of law; concepts and sources of law, and the relationship between law and social change; historical and constitutional foundations of the Canadian legal system; the common law and civil law traditions; legal institutions and methods; statutory interpretation and precedent; role of judges, lawyers and lay persons; effectiveness and accessibility of the legal system; alternatives to the court process as a mechanism for dispute resolution.

Precludes additional credit for Law 51.101* and 51.102* (both no longer offered).

Lectures two hours a week and group workshops one hour every second week.

Law 51.203

Introduction to Private Law Relationships

This course examines the origins and scope of modern private law relationships. Values espoused by such concepts as legal personality, property and obligations arising from contracts, torts and the law of restitution will be studied. The interaction of various private law categories and the role of the state in ordering private relations will be emphasized.

Prerequisite: Law 51.100 with a grade of C- or better. Lectures and discussions three hours a week.

Law 51.204

An Introduction to Criminal Law in Context

Canadian criminal process; the nature and purpose of criminal law; the criminal act as distinguished from civil wrong; the origin and development of contemporary principles and procedures, the various categories of criminal conduct. The role of enforcement agencies and of the courts in the administration of criminal law. Methods of criminal correction. Introduction to the study of the relationship between criminal activity and deviant behavior.

Precludes additional credit for Law 51.234 (no longer offered)

Prerequisite: Law 51.100 with a grade of C- or better. Lectures and discussions three hours a week.

Law 51.205

Introduction to Public Law

This course examines the law relating to the state and the state's relationship to other legal persons. Basic principles of constitutional law, administrative law and selected other areas of public law are dealt with. Themes include the special features and problems of public law, implications of the expanded new role of modern governments, and legal and alternative processes in public law.

Prerequisite: Law 51.100 with a grade of C- or better or Political Science 47.100 with a grade of C- or better.

Lectures and discussions three hours a week.

Law 51.300★

The Legal Process

This course explores advanced topics in the legal process such as the nature and function of law, dispute resolution and law-making.

Precludes additional credit for Law 51.200 (no longer offered).

Prerequisites: Law 51.100 (or its equivalent) and any two of Law 51.203, 51.204 or 51.205.

Lectures and discussions three hours a week.

Law 51.301★

Women and the Legal Process

This course examines the manner in which the legal process has affected the status of women. Areas of concentration within the Canadian context include the criminal law, citizenship and immigration, education, employment, and welfare and social services.

Prerequisite: Law 51.100 or Women's Studies 09.188 or 09.288 and at least Third-year standing.

Lectures and discussions three hours a week.

Law 51.302★

Canadian Legal Professions

An introduction to the concept of professionalism, the particular characteristics of the Canadian legal professions, the role of lawyers in society and the future of legal professionalism.

Prerequisites: Completion of Law 51.100 and any one of Law 51.203, 51.204 or 51.205.

Law 51.303★

Contracts

This course explores in depth some aspects of the contractual relationship. Basic doctrines and precepts are studied and an assessment made of their rationale and efficiency. The role of contracts as a means of economic and social control is considered.

Such issues as the interests protected by contract law, the most suitable remedies and the increasing influence of legislation on the ordering of contractual relations are also addressed.

Prerequisite: Law 51.203.

Lectures and discussions three hours a week.

Law 51.305★

Law and Regulation

This course explores definitions and goals of regulation, the instruments through which regulation is pursued, and why it takes particular forms. Regulation is treated as a pervasive phenomenon that cuts across a number of dichotomies such as public/private, legal/political, legislative/administrative, etc. Particular forms of regulation to be considered may include contracting, tort liability, standard setting, rate fixing, resource allocation, welfare and social benefit conferral.

Prerequisite: Law 51.203 or 51.205.

Law 51.306★

Mediation

This course familiarizes students with the theory and practice of mediation. The course examines the historical roots of mediation, looks at the influence of legal reformers and community activists who gave rise to the informal justice movement, then turns to current practice. Mediation is contrasted with formal litigation as well as other alternative dispute resolution processes, and is situated within the broader aspects of social and legal control. The critiques of mediation including feminist, marxist, and critical legal theory are examined as well as issues relating to power, gender, race and class. Mediation is explored as a process for dealing with criminal, civil, commercial, labour, public policy and environmental matters, as well as family and community disputes.

Prerequisites: Law 51.100 and one of 51.203, 51.204 or 51.205.

Law 51.311★

Philosophy of Law: The Nature of Law

This course examines the concept of law, leading theories of law and related concepts such as rules and obligations, power and authority, coercion, and justice. (Also listed as Philosophy 32.311★.)

Precludes additional credit for Philosophy 32.350 or Law 51.310 (no longer offered).

Prerequisites: Law 51.100 and one of Law 51.203, 51.204 or 51.205.

Lectures and discussions three hours a week.

Law 51.312★

Philosophy of Law: The Logic of the Law

This course examines the nature of legal reasoning and analyzes concepts particularly used in the course of legal reasoning such as rights and duties, ownership and possession, liability and punishment. (Also listed as Philosophy 32.312★.)

Precludes additional credit for Philosophy 32.350 or Law 51.310 (no longer offered).

Prerequisite: Law 51.311★.

Lectures and discussions three hours a week.

Law 51.315

Theory of Law and Politics

A study of the interrelated theories of law and politics, as they are treated by prominent thinkers and by

important schools of thought and as they have manifested themselves in various legal and political institutions throughout history. Topics of investigation include law and ethics, justice and equity, positivism and natural law, state absolutism and positive law, the political background of past codifications as well as anthropological and historical theories of law and society.

Precludes additional credit for Law 51.210 (no longer offered).

Prerequisites: Law 51.100 and one of Law 51.203, 51.204, 51.205, or Political Science 47.100 and 47.230.

Lectures and discussions three hours a week.

Law 51.316★

Sociology of Law

This course offers an introduction to and overview of the sociology of law. The development of sociology of law is located in sociology's wider concerns with the distinctive features of modernity, the West and capitalism. These themes are explored through the writings on law of Durkheim (changing forms of social solidarity, rise of restitutive law, contract), Weber (formal rationality, legal rationalization, economic calculation) and Marx (law, state and coercion, legal form/commodity form). The course outlines the way in which these themes have influenced the subsequent development of the sociology of law. (Also listed as Sociology 53.381★.)

Prerequisite: One of Law 51.203, 51.204, or 51.205.

Law 51.321★

The Legal Framework of Business Enterprises

This course examines the forms of carrying on economic activity. The legal existence, identity and structure of proprietorship, partnership, corporation and Crown entity are discussed. The rights and obligations of such business enterprises both internally and in relationship with other persons are analyzed. The relationship between legal form and economic function and the role of state regulation is also considered. Precludes additional credit for Law 51.321 (no longer offered).

Prerequisite: Law 51.203.

Lectures and discussions three hours a week.

Law 51.323★

The Legal Nature of Property

An examination of the nature and functions of property as a legal and social institution, with particular reference to theories of property, the scope of property interests, and the relationship between individual property rights and the state.

Precludes additional credit for Law 51.323 (no longer offered).

Prerequisite: Law 51.203.

Lectures and discussions three hours a week.

Law 51.324

Tax Law and Policy

An introduction to federal income taxation, both personal and corporate, and a review of the Canadian tax system generally with some reference to the development, implementation and enforcement of tax policy.

Prerequisite: Law 51.203 or 51.220 or 51.232★.

Law 51.325★

Consumer Law

This course examines the need for consumer protection in the provision of goods and services, and investigates the traditional legal protection afforded by statute and common law, the legislative response to consumer pressures and the judicial response in recent Canadian, English and American law. In addition, reform of consumer law is considered. Precludes additional credit for law 51.325 (no longer offered).

Prerequisite: Law 51.203 or 51.220 or 51.232★ or Business 42.262★.

Law 51.326★

Banking Law

This course examines the law relating to banks and banking. Particular emphasis is placed on the nature of the legal relationship created and on the legal rights and duties of the parties involved. Areas studied include the consumer and corporate aspects of banking (including computerization and electronic fund transfers) as well as the regulation of banking.

Prerequisite: Law 51.203 or 51.220 or 51.232★ or Business 42.262★.

Law 51.327★

International Economic Law: Trade and Investment

A general introduction to the legal aspects of foreign trade and investment. Topics may include: the international sale of goods and related issues of finance of transnational transactions, international carriage of goods, insurance, agency and trading houses; other forms of trade, e.g., counter-trade; foreign investment including transfer of technology and joint ventures; and dispute settlement of international disputes by litigation and arbitration.

Precludes additional credit for Law 51.322 (no longer offered).

Prerequisite: Law 51.203 or 51.232★ or Business 42.262★.

Law 51.328★

International Economic Law: International Regulation

A study of international regulation of trade and investment through such mechanisms as bilateral, regional and multilateral treaties and agreements. Topics may include: The General Agreement on Tariffs and Trade; the European Economic Community; the United Nations Conference on Trade and Development; intergovernmental commodity agreements; the International Monetary Fund; the World Bank and others.

Precludes additional credit for Law 51.322 (no longer offered).

Prerequisite: Law 51.203 or 51.205.

Law 51.333★

Injury, Compensation and the Law

This course focuses on the problems of injury and compensation. Varying legal responses to these problems are examined in their economic, historical, comparative, political, philosophical or sociological contexts. Particular concerns include definitions of personal injury, the objectives and effectiveness of legal intervention, varying forms of compensation

and the relation between private law and state regulation.

Precludes additional credit for Law 51.333 (no longer offered).

Prerequisite: Law 51.203.

Lectures and discussions three hours a week.

Law 51.335★

Law, Crime and Society in Historical Perspective

The course introduces students to the history of the relationship between the criminal law system and society. Changing issues in the criminal law and the nature of institutional responses are examined, covering medieval to early nineteenth-century England and nineteenth to early twentieth-century Canada.

Prerequisite: Law 51.204.

Lectures and discussions three hours a week.

Law 51.336★

Criminal Law: Process and Politics

This course examines the issues and concerns surrounding criminal law process in Canada. The structure and use of the process is studied, in order to examine its fairness, its defects, and possible reform initiatives. In particular, issues concerning gender, race and class bias in the implementation and application of the criminal law are examined.

Prerequisite: Law 51.204.

Lectures and discussions three hours a week.

Law 51.337★

Young Offenders and the Law

A review of the Young Offenders Act within the framework of the Canadian justice system, with particular emphasis on historical and philosophical developments and objectives. Current topics include: constitutional issues, procedure, confessions, transfers, sentencing options, alternative measures, reviews, and possible amendments.

Precludes additional credit for Law 51.493★ (if taken in 1987-88).

Prerequisite: Law 51.204.

Law 51.341★

Employment Law

This course investigates the legal regulation of the employment relationship. It comprises a study of the contractual basis and the significant statutory regulation of the relationship. Particular questions such as who is an employee, and what are the rights and duties of the employee and the employer in creating, carrying out and terminating the relationship are canvassed. Statutory regulation through employment standards legislation, human rights codes, workers' compensation acts, occupational health and safety acts and other related statutes are covered.

Precludes additional credit for Law 51.320 (no longer offered).

Prerequisite: Law 51.203.

Lectures and discussions three hours a week.

Law 51.342★

Landlord and Tenant Relations

An examination of the nature and history, creation and termination of the landlord and tenant relationship in Ontario, focusing on the rights and duties of both landlord and tenant under common law and statute and the legal distinction between residential and commercial tenancies. Particular attention is

given to the recent statutory regulation of residential tenancies in Ontario, and the implications of rent control and security of tenure for housing policy. Precludes additional credit for Law 51.320 (no longer offered).

Prerequisite: Law 51.203 or 51.220.

Lectures and discussions three hours a week.

Law 51.345★

Labour Law

A study of the ordering role of law in industrial relations. The course considers the effect of law on the relationship among employer, employer association, employee, union and the public. The main process considered is collective bargaining, and subprocesses studied are the recognition of the bargaining agent, bargaining for the collective agreement and administration of the agreement. The attempt to resolve industrial conflict by formalization of the disputes into adversary modes and other methods of conflict-resolution is considered. The ordering role is studied in both its social and legal context.

Precludes additional credit for Law 51.441 (no longer offered).

Prerequisite: Law 51.200 or 51.203 or 51.205. Permission may be given to students in Business or Directed Interdisciplinary Studies who have completed Law 51.231★ or Business 42.261★.

Lectures and discussions three hours a week.

Law 51.348★

Legal Aspects of Sport

This course deals with issues in the legal regulation of sporting activities in Canada. Subjects considered include the constitutional power to regulate sport, government involvement in sports administration, criminal prosecutions for sports violence, civil liability for sports injuries including actions against school boards, sex discrimination in sport, and legal, economic and commercial aspects of professional and intercollegiate leagues including players' employment contracts and disciplinary proceedings.

Prerequisite: Law 51.203 or 51.205.

Lectures and discussions three hours a week.

Law 51.350★

Constitutional Law

An investigation of the Canadian constitution. Sovereignty, the nature and units of executive, legislative, and judicial power in Canada as interpreted by the courts. The distribution of powers under the Canadian constitution including an investigation of contemporary problems of federalism. Problems of judicial review.

Precludes additional credit for Law 51.450 (no longer offered).

Prerequisite: Law 51.205 or a Political Science course in Canadian government.

Law 51.351★

Communications Law I

This course is concerned with the general laws governing the mass media in Canada with attention to their effect on freedom of expression. Specific topics for examination include: the development of freedom of expression and of the press in Canadian constitutional law, including the Charter of Rights and Freedom; statutory limits on freedom of expression and of the press; contempt of court; civil defamation; and

privacy. (Also listed as Journalism 28.351★ and Mass Communication 27.351★.)

Precludes additional credit for Mass Communication 27.251★ and Journalism 28.251★ (first offered in 1996-97).

Prerequisite: One of Law 51.100, Mass Communication 27.111, or Journalism 28.100.

Lectures and discussions three hours a week.

Law 51.352★

Communications Law II

The law as it affects the Canadian broadcasting and communications industry. The primary focus of the course is on the operations of the Canadian Radio-Television and Telecommunications Commission. Specific topics for examination may include: administrative formulation of policy; multiple, monopoly and foreign ownership; control of program content (violence, obscenity, "good taste," food and drug commercials, liquor advertising, indirect censorship); controlling program quality; the provision of a right of access to the media; cablevision licensing and control; alternative sanctions. (Also listed as Journalism 28.352★ and Mass Communication 27.352★.)

Prerequisite: One of Law 51.100, Mass Communication 27.111, or Journalism 28.100.

Lectures and discussions three hours a week.

Law 51.353

Civil Liberties and Human Rights

An examination of theoretical and empirical issues regarding civil liberties and human rights in the Canadian context. Issues that may be addressed include: competing theoretical approaches to rights and liberties; the historical development of rights; the desirability and effectiveness of employing rights discourses and rights strategies; the nature of the contests between individuals, collectivities and the state involved in rights claims. Empirical focus draws selectively from rights protected in the Canadian Charter of Rights and Freedoms as well as from human rights legislation, freedom of information statutes and the like, and may draw upon comparative study in order to enhance understanding of Canadian issues. Prerequisite: Law 51.200 or 51.204 or 51.205.

Seminars three hours a week.

Law 51.354★

Law and Aboriginal Peoples of Canada

A study of the legal situation of aboriginal peoples in Canada. Topics include status, aboriginal rights, treaties, legislative jurisdiction and the constitutional framework, aboriginal claims, and self-government. Comparative references to aboriginal policy in other countries are also considered.

Prerequisite: Law 51.205 or 51.353.

Law 51.355★

Law Reform and the Protection of Life

A study of the relationship among law, medicine and ethics concerning questions about life and death. Topics considered include the definition of death; cessation of treatment and euthanasia; right to refuse treatment; "right to die" legislation; meaning of "person" in the medical/legal context; informed consent; human experimentation; behavior modification; and quality of life.

Prerequisite: Law 51.100 or 51.200 or 51.205.

Seminars three hours a week.

Law 51.356★

Administrative Law

An examination of the structure and procedure of Canadian administrative authorities, and of policy, statutory, and judicial environments in which they operate. Topics include: techniques for implementing public policy and structuring public authorities, interpretation of enabling statutes, procedural safeguards and the exercise of statutory discretion. The course considers attempts by selected authorities to reconcile competing demands of efficiency and fairness. Precludes additional credit for Law 51.456★ (no longer offered).

Prerequisites: One of Law 51.205, 51.305★, or 51.352★ (Journalism 28.352★, Mass Communication 27.352★), or Political Science 47.200.

Lectures and discussions three hours a week.

Law 51.363

Public International Law

An examination of the role of law in contemporary international relations. Nature, history and sources of international law; international personality of states; the status of international organizations and individuals; creation and effect of international obligations; importance and functions of law in the settlement of international disputes.

Precludes additional credit for Law 51.463 (no longer offered).

Prerequisite: Law 51.100 or 51.200 or 51.205 or a Political Science or History course in international relations.

Seminars three hours a week.

Law 51.374★

Local Government Law

The legal framework of local and regional governments; the distribution of functions between the levels of local government and problems of the relationship between local government bodies and provincial and federal authorities; planning law and land use, regionalism and local government reform.

Precludes additional credit for Geography 45.374★ and Law 51.374 (no longer offered).

Prerequisite: Law 51.205.

Lectures and discussions three hours a week.

Law 51.380★

Law of Environmental Quality

An examination of various aspects of environmental law such as pollution control, available legal actions and remedies and the legal foundations for participation in decision-making processes. The social, economic and political forces that influence the formulation and implementation of law in this regulatory area are analyzed as are alternative forms of regulation that may articulate different sorts of demands.

Precludes additional credit for Law 51.380 (no longer offered).

Prerequisite: Law 51.203, 51.204 or 51.205.

Law 51.384

Law of the Family

This course examines the legal framework surrounding the family and family relationships in Canadian society. Main topics include marriage and cohabitation, matrimonial support, custody and access, adoption, child protection, domestic violence and

dissolution of marriage. Major themes are state intervention in family affairs through the law; how the law copes with and encourages changes in the structure of the family; the relationship between movements towards equality for women and children and family law; the suitability of the adversarial process to family disputes.

Precludes additional credit for Law 51.284 (no longer offered).

Prerequisite: Law 51.203.

Lectures and discussions three hours a week.

Law 51.395★

Practicum in Criminal Justice

This course provides experience in an institutional setting and supplements the theoretical approach of the classroom. An emphasis is placed on understanding the role of the particular agency within the wider institutional framework and also within a consistent and coherent policy on criminal justice.

Prerequisite: Open only to students formally admitted to, and registered in, the Criminology and Criminal Justice Concentration.

Law 51.397★

Legal Research Methods

An introduction to basic methods used in the design and execution of research projects in law in a social science context. The course considers research principles, the significance of theoretical approaches taken to research, and the diversity of law-related materials and research procedures. Computer-assisted legal research, elementary problem-solving skills, bibliographic and citation skills are also developed. This is a required course for students enrolled in the Honours program.

Prerequisites: Any two of Law 51.203, 51.204, or 51.205 and Honours standing.

Law 51.401★

Law, Family and Gender

The objective of the course is to explore the relationship between family law and: ideology of the family, gender roles, and the reproduction of family structures. The social ramifications of family law are emphasized, with a view to determining the potential for family law reform as an agency of social change.

Prerequisites: Law 51.301★ or 51.384 and Fourth-year Honours standing.

Law 51.402★

Feminist Theories of Law

This course identifies, describes and contextualizes the literature comprising feminist perspectives on law. The place of feminist theories on law within other critical literature on law is examined, as well as the differing theoretical bases of feminist perspectives on law. The significance for theories of equality and for law reform strategies of understanding differences between feminist theories on law is stressed, as well as the unique contributions of the various perspectives.

Prerequisite: Law 51.301★ or Fourth-year Honours standing.

Law 51.403★

Historical Perspectives on Law, Economy and Society

This course introduces students to the nature of the

relationship between private law, and economic and social change. Theoretical perspectives of this relationship are illustrated with case studies of selected topics.

Prerequisite: Law 51.203.

Law 51.405★

Contemporary Theories of Law, State and Politics

An examination of contemporary approaches to law, state and politics with emphasis upon neo-marxist theories and 'post-marxist' challenges. The course explores questions of agency and structure in determining state and legal forms, responses and mediations and the roles of law and state in shaping political struggles.

Prerequisite: Law 51.204 or 51.205.

Law 51.406★

Church and State in the Laws of England, Scotland and Canada

This course examines, within a historical framework, the legal nature of the interaction of church and state in England, Scotland and Canada from the Reformation to the Canadian Charter of Rights and Freedoms. Particular emphasis is placed on the themes of religious pluralism within one state and resistance to state intervention in church affairs. Course content is interdisciplinary, with readings from legal, historical and theological literature.

Prerequisite: Law 51.100.

Law 51.410★

Modern Legal Theory

An introduction to realist and post-realist legal scholarship with a primary emphasis on Canadian, American and British approaches to the study of law. Topics to be addressed may include the Canadian Treatise tradition, American legal realism, empirical approaches to legal problems, the sociological movement in law, critical legal scholarship, recent developments in marxian theories of law, normative economic theory, and Canadian feminist legal scholarship.

Prerequisites: Any two of Law 51.203, 51.204, or 51.205.

Law 51.417★

Law In Advanced Capitalist Society

The course examines the different ways in which sociological and legal theory has attempted to grasp and understand the changing role and function of law in modern society, with particular reference to advanced capitalist societies. Topics include: the welfare state and the use of regulatory law; juridification and legalisation; counter-trends, deregulation, informalism, legal pluralism. (Also listed as Sociology 53.433★.)

Prerequisite: Law 51.311★, 51.315, 51.316★ or Sociology 53.381★.

Law 51.420★

Advanced International Economic Law

In-depth examination of selected topics in the field of international economic law. Topics to be studied may include the legal regulation of international economic activity, methods of dispute settlement in international economic and trade law, standardization of international trade laws, the development of an autonomous international trade law, and selected

conventions and institutions governing international economic law. The topic for 1996-97 will be "Dispute Resolution in International Economic Law".

Also offered at the graduate level, with additional or different requirements, as Law 51.594, for which additional credit is precluded.

Prerequisite: Law 51.327★ or 51.328★.

Law 51.422★

Legal Accountability of Management

This course examines the role and function of persons involved in the management of business enterprises and the scope of legal regulation of them. Status, social responsibility, fiduciary obligations and rights are analyzed. Consideration of control and accountability of managers focus on obligations owed to the enterprise unit itself, the constitutional rights of members, and standards imposed by statutory regulation.

Precludes additional credit for Law 51.321 (no longer offered).

Prerequisite: Law 51.321★.

Law 51.432★

Legal Regulation of Corporate Crime

This course examines the current debates over the regulation of corporate crime from both legal and policy perspectives. Different theoretical perspectives on the nature and causes of corporate crime, and the role of the state in regulating corporate behaviour are examined (through selected case studies) with a view to determining the reasons for the failure of the criminal justice system to respond to corporate crime.

Prerequisites: Law 51.204 and one of Law 51.305★, 51.321★ or 51.380★, or 51.321 (no longer offered).

Law 51.435★

Criminal Justice Reform: Theory and Practice.

An advanced study of the problematic relationship between social transformation and criminal justice reform. This includes an examination of the theoretical and practical reasons behind the use of criminal law as an instrument of social control. Specific reform initiatives and processes are analyzed so as to illustrate not only the possible alternate responses to social problems but also the varying consequences of these responses.

Prerequisites: Law 51.204 or 51.234 and Fourth-year Honours standing.

Seminars three hours a week.

Law 51.436★

Contemporary Issues in Criminal Law

An advanced seminar dealing with selected issues and problems in the area of criminal law not covered in the regular course program. The choice of topics varies from year to year depending on demand and interest. The topics are announced well in advance of the period of registration. For 1996-97 the topic for Section A is *Current Issues in Policing*. This course examines a series of key legal, social and other current issues in Canadian policing and law enforcement. These topics include such issues as: the role, mandate and legal authority of the police, including the common law idea of the police; governance of the police, including constitutional questions; selected police powers, including the use of deadly force; public accountability and oversight; models of polic-

ing, including community policing; delivery of police services to structurally disadvantaged groups; evaluating police performance.

Other topics may also be offered and students are advised to consult with the Department.

Prerequisite: Fourth-year Honours standing.

Law 51.437★

Legal Medical Issues in Criminal Law

An advanced study of selected issues involving medical-legal conflicts and relationships in the field of social control. Topics covered may include mental disorder and criminal liability, theories of personality, diversion of offenders to civil commitment in hospital, insanity, automatism, fitness to stand trial, prediction of dangerousness, and the classification, control, prescription and prohibition of psychoactive drugs.

Prerequisites: Law 51.204 and Fourth-year Honours standing.

Law 51.438★

Sentencing: Theories and Practice

This course examines theories of sentencing, current sentencing laws, sentencing practices and perceptions of sentencing. In addition, available data on sentencing practice across Canada are considered and recent reforms in other jurisdictions are studied. Finally there is critical review of the reforms recently proposed by the Canadian Sentencing Commission. The approach is multidisciplinary, drawing upon research and theory in the fields of law, criminology, social psychology and sociology.

Prerequisites: Law 51.204 and Fourth-year Honours standing. This course may not be taken by students who have completed the course as a special topics course.

Law 51.439★

Criminal Proceedings and Dissent: Political Offences and National Security Measures

This course follows a historical and critical analysis of the legal responses of authorities to dissent and political opposition, focusing primarily on Canadian examples. Criminal proceedings involving political offences (treason, sedition, riot), national security measures (*War Measures Act*, *Official Secrets Act*), and other extraordinary official measures (police, labour, immigration, parliamentary privilege, etc.) are examined.

Precludes additional credit for Law 51.436★ (if taken in 1990-91).

Prerequisites: Law 51.353 or Law 51.335★, and Fourth-year Honours standing.

Seminars three hours a week.

Law 51.440★

The Arbitration Process in Industrial Relations

An examination of arbitration in industrial relations in the form of rights arbitration to resolve disputes in the administration of the collective agreement and in the form of interest arbitration to resolve disputes in the negotiation of the collective agreement. The benefits and drawbacks of the process, the values that it espouses and the results that it produces are considered.

Precludes additional credit for Law 51.441 (no longer offered).

Prerequisite: Law 51.345★.

Seminars three hours a week.

Law 51.445★

Labour Relations in the Public Service

A study of the collective bargaining process in the public sector with particular emphasis on the federal, Ontario and Quebec public services. The problems of adapting accepted collective bargaining procedures and techniques to the public service environment; the right to strike in the public service and essential industries; grievance procedures; the general problem of labour-management relationships in the public sector and the consequences thereof for efficiency and loyalty.

Prerequisite: Law 51.341★ or 51.345★ or 51.441.

Seminars three hours a week.

Law 51.451★

Selected Problems in Comparative Constitutional Law

The topics of this course may vary from year to year. Topics may include comparative federalism, comparative study of civil liberties and human rights, comparative bases and theories of judicial review in their social, political, economic or historical contexts. Precludes additional credit for Law 51.450 (no longer offered).

Prerequisite: Law 51.350★.

Law 51.454★

Aboriginal Peoples and the Canadian Criminal Legal System

A critical analysis of the interaction between Aboriginal peoples and the systems involved with the administration of Canadian criminal justice including policing, courts, corrections and aftercare. The content and effects of past and present policies, processes and laws as they relate to Aboriginal peoples is examined. Alternatives such as self-government, and self-determination are canvassed and assessed for their potential to contribute to the realization of an appropriate justice system for Aboriginal peoples. Precludes additional credit for Law 51.436★B (if taken in 1992-94).

Prerequisites: Law 51.204, 51.354★ and Fourth-year Honours standing.

Law 51.457★

Administrative Law and Control

An examination of characteristics and selected problems of control of administrative action. Topics include: varieties of traditional and constitutional, legal and judicial control, impact of the Charter, reforms to administrative law control systems in Canada, and comparisons with developments outside Canada. (Also listed as Public Administration 50.537★.) Precludes additional credit for Law 51.455 (no longer offered).

Prerequisites: Law 51.305★ or 51.356★, or 51.456★ (no longer offered) or Public Administration 50.536★. Lectures and discussions three hours a week.

Law 51.460★

The Law of International Organizations

The nature, character, as well as the legal status and jurisdiction of intergovernmental international organizations. Sovereign equality of states and their rights and duties arising from membership in international organizations. The distinction between international and supra-national institutions. Particular attention is focused on the United Nations system, including the

International Court of Justice; selected subsidiary organs, and specialized agencies; the role of the non-governmental organizations at times of crisis. Prerequisite: Law 51.363 (formerly 51.463).

Law 51.464★

Legal Aspects of the International Protection of Human Rights

This course is an introduction to the developing international law relating to the protection of human rights. General concepts, rules and institutions are considered, together with specific issues of concern, for example, self-determination, aboriginal rights, the refugee problem, and torture. The inherent problems and overall potential of international law in this area are discussed.

Prerequisite: Law 51.353 or Law 51.363 (formerly 51.463).

Lectures and discussions three hours a week.

Law 51.465★

Contemporary Issues in Public International Law

The topics of this course, to be offered as demand warrants, may vary from year to year and are announced well in advance of the relevant registration period. They may include (a) transnational environmental issues; (b) the international law of armed conflict, peacekeeping and neutrality; (c) the law of international treaties and transnational agreements; and (d) state responsibility under international law. Prerequisite: Law 51.363 (or, if Law 51.465★ is offered in the Winter term, concurrent registration in Law 51.363).

Seminars three hours a week.

Law 51.467★

Immigration and Refugee Law

Immigrants and refugees are considered in a Canadian legal and demographic context, and in the context of international and human rights law. The course analyzes the criteria and the procedures established by the Canadian Immigration Act in the light of developments in immigration policy. It examines legal and social problems faced by non-citizens and rights-related issues affecting refugees and immigrants, including entry and removal, family reunion, citizenship, remedies, the rights of clandestine migrants; settlement rights; non-discrimination; asylum; and a national community's right to determine membership.

Prerequisite: Law 51.205.

Seminars three hours a week.

Law 51.471★

Special Topic in Criminal Justice and Social Policy

Examination of a selected topic in criminal justice and social policy. Topics to be announced in advance each year. This course is part of the Summer School in Criminal Justice and Social Policy and is offered by the Department of Law. (Also listed as Social Work 52.571★ and Sociology 53.471★.)

Prerequisite: Fourth-year Honours standing or permission of the Department.

Law 51.472★**Special Topic in Criminal Justice and Social Policy**

Examination of a selected topic in criminal justice and social policy. Topics to be announced in advance each year. This course is part of the Summer School in Criminal Justice and Social Policy and is offered by the Department of Sociology and Anthropology. (Also listed as Social Work 52.572★ and Sociology 53.472★.)

Prerequisite: Fourth-year Honours standing or permission of the Department.

Law 51.473★**Special Topic in Criminal Justice and Social Policy**

Examination of a selected topic in criminal justice and social policy. Topics to be announced in advance each year. This course is part of the Summer School in Criminal Justice and Social Policy and is offered by the School of Social Work. (Also listed as Social Work 52.573★ and Sociology 53.473★.)

Prerequisite: Fourth-year Honours standing or permission of the Department.

Law 51.486★**The Civilist Tradition**

A comparative study of selected topics of several major European legal systems which are based on Roman law. The development of Roman law up to and including Justinian's *corpus juris civilis*. The reception of Roman law by various European continental legal systems. Comparative analysis of selected articles of the French, Austrian and German codes. Prerequisites: Law 51.100 (or its equivalent) and another Law course or a Classics course.

Lectures and discussions three hours a week.

Law 51.487★**Quebec Civil Law**

A comparative examination of the legal system of Quebec. The weight and importance of the various sources of law in Quebec and how the law is made. Study of the Quebec Civil Code and of the force of the code provisions. Division of the code and influence of Roman law. Techniques of interpretation of the code. Detailed study of selected Articles of the code. Interpretation and application of the code in federal appeal courts.

Prerequisites: Law 51.100 (or its equivalent) and another Law course or Law 51.486★.

Lectures and discussions three hours a week.

Law 51.488★**Socialist Legal Systems**

A comparative approach to the selected legal problems of the Soviet Union and a number of other socialist states. Marxist concepts of state and law, the Leninist, Stalinist and contemporary interpretation of law and their practical applications.

Prerequisite: One of Law 51.100 (or its equivalent), 51.200, 51.205, 51.450, 51.451★, 51.486★, a course in East European government or in the history of Eastern Europe.

Law 51.490**Directed Studies**

A reading or research course for selected students who wish to investigate a particular topic of interest. Available to Third- and Fourth-year students only. Prerequisites: Written acceptance by a faculty adviser and permission of the Department.

Law 51.491★**Tutorial in Law**

Members of the Department are prepared to give reading courses in selected fields. Students are encouraged to enquire from individual instructors or the Supervisor of Honours in what fields such reading courses are available.

Prerequisites: Written acceptance by a faculty member and permission of the Department.

Law 51.492★**Tutorial in Law**

Members of the Department are prepared to give reading courses in selected fields. Students are encouraged to enquire from individual instructors or the Supervisor of Honours in what fields such reading courses are available.

Prerequisites: Written acceptance by a faculty member and permission of the Department.

Law 51.493★**Advanced Legal Topics**

The topics of this course to be offered as demand warrants, vary from year to year, and are announced well in advance of the period of registration. For 1996-97 the topic for Section A is *Disability and Civil Rights*. Exploring a wide variety of topics ranging from a historical perspective of disability through the growth of the disabled civil rights movement and the impact of the medical model on policy development, this course provides a comprehensive overview of the evolution of legislation as it related to persons with disabilities in Canada. Topics of special interest include: The Charter of Rights and human rights legislation, employment equity, immigration and access to education.

Prerequisites: Law 51.353 and Fourth-year Honours standing.

Law 51.494★**Advanced Legal Topics**

The topics of this course, to be offered as demand warrants, vary from year to year, and are announced well in advance of the period of registration. In 1996-97, the topic for Section A is *Contemporary Theories of Justice*. This seminar explores and compares recent theories of justice such as those of Rawls, Walzer and Habermas. The course focuses on the conditions of justice such as result-oriented models (e.g., redistributive, needs) or procedural models (e.g., due process) and compares 'justice' and 'the ethic of care.' These themes are explored through contemporary justice controversies (e.g., affirmative action, racial integration, redistribution of wealth).

Prerequisite: Fourth-year Honours standing.

For 1996-97 the topic for Section B is *Child Welfare Law: Children, Families and the State*. The primary objective of this course is to provide students of law and/or social work with an understanding of the theoretical and practical issues that arise when a child

welfare agency becomes involved in seeking to use the legal system to protect a child from abuse, neglect or deprivation.

For 1996-97 the topic for Section C is "*Environmental Regulation and Social Justice: Contemporary Issues*." This course will assess the potential of environmental law to protect the environment and people while promoting opportunities for informed participation in environmental decision making by groups that have traditionally been excluded from these processes. In addition, the course will explore a number of contemporary issues of social justice that are raised by the legal regulation of the environment.

Prerequisite: Fourth-year Honours standing.

Graduate Courses Open to Undergraduate Students

Some graduate courses may also be open to interested Fourth-year students with permission of the Department.

(Social Sciences)

Telephone: 520-2588

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Academic Administration

Program Co-ordinator

A. Forth

Management Committee Members

J.G. Bellamy

P. Fitzgerald

B. Landry

T. Wilkinson

One student

General Information

This certificate program is designed for persons employed in the areas of law enforcement, national security or corrections, who wish to attend university courses. The program is offered in Day and Evening divisions. Candidates for the certificate are also encouraged to investigate undergraduate degree programs offered by the University. Courses taken for the certificate are normally creditable towards a Bachelor of Arts degree. Such a degree program will normally require at least 9.0 further credits in addition to those required for the certificate. Persons who wish to complete a Bachelor of Arts degree after taking the certificate must complete at least 5.0 of the credits required for a Bachelor of Arts degree after the awarding of the certificate, at least 3.0 of which must be in the area of specialization of the new program.

Admission Requirements

The basic admission requirement is the completion of the OSSD including six OACs, or the equivalent, with a overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations. (See p. 36.)

Candidates may be admitted with advanced standing, but must complete at least 4.0 credits for the certificate, including all core courses, at Carleton University.

Course Requirements

The following courses are required:

1. Law 51.204 (Introduction to Criminal Law in Context, prerequisite is C- or better in Law 51.100, or permission of the Department of Law);
2. Sociology 53.255★ (Sociology of Deviance, prerequisite C- or better in Sociology 53.100 or Anthropology 54.100 or Sociology-Anthropology 56.100) and 53.256★ (Police in Society);
3. Political Science 47.200 (Canadian Government and Politics, prerequisite is Political Science 47.100);

The candidate must, in addition, complete 3.0 credits, chosen in consultation with the Program Co-ordinator.

A candidate for the certificate must obtain a grade of C or better in at least one-half of the credits taken at Carleton University for the certificate.

Students are permitted eight attempts to complete the 6.0 credit program.

Department of Linguistics and Applied Language Studies

372

(Arts)

249 Paterson Hall
Telephone: 520-2802

Academic Administration

Chair

Janice Yalden

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C. Stanley Jones
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Janice Yalden

Associate Professors

Ann Laubstein
Peter Medway
Lynne Young
Helmut Zobl

Assistant Professors

Ellen Cray
Pat Currie
Richard Darville

Adjunct Professors

Keith Christopher
C. Douglas Ellis
Kumiko Murasugi

General Information

The Department of Linguistics and Applied Language Studies offers programs leading to a Pass degree in Linguistics and Applied Language Studies and two Honours degrees - Honours in Linguistics and Applied Language Studies and Honours in Teaching English as a Second Language. Students may also pursue the study of Linguistics and Applied Language Studies in conjunction with another discipline in a Combined Pass or Honours degree.

The aim of the Pass program is to provide a general background and the methodological bases and procedures for understanding the nature and role of language. In addition to Linguistics 29.100, there is a group of courses dealing with general linguistics, concentrating on the analysis of language on both the descriptive and historical levels, and a group of courses dealing with language and its connections to other human studies.

The completion of the Pass program enables the student to choose either of the two Honours degree specializations.

The Honours degree in Linguistics and Applied Language Studies allows students to develop their inter-

est in general linguistics or in applied language studies. The Honours degree in Teaching English as a Second Language is designed for students intending to specialize in teaching English as a foreign language and other matters related to foreign language study in general.

The Department of Linguistics and Applied Language Studies also offers a 5.0 credit program leading to a Certificate in the Teaching of English as a Second Language for those students who already have a degree, in either Linguistics or another subject, or who have extensive experience in teaching. The courses include the theory of teaching English as a second language, an intensive, advanced course in the structure of English, and a range of complementary half-credit courses.

If a student is subsequently admitted to the M.A. in Applied Language Studies, 2.0 appropriate and relevant credits from the CTESL (one at the 400-level and one at the 500-level) MAY be counted towards the graduate degree, subject to the approval of the Graduate Supervisor and the Dean of the Faculty of Graduate Studies and Research. (Such double-counting is only possible for students who already hold an Honours degree or a pass degree along with a B.Ed.).

English as a Second Language

For courses in English as a Second Language. (See p. 118.)

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Pass Programs

Concentration A

This concentration focuses on general linguistics. The requirements are:

1. 29.100, preferably in the First year.
2. 29.201★, 29.203★, 29.302★, 29.304★;
3. 1.0 credit in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★;
4. 2.5 additional credits in Linguistics and Applied Language Studies, chosen in consultation with the Department;
5. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For the Combined Pass program the requirements are:

1. 29.100, preferably in the First year.
2. 29.201★, 29.203★, 29.302★, 29.304★.
3. 0.5 credit in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★.
4. 0.5 additional credit in Linguistics and Applied Language Studies, chosen in consultation with the Department.

Concentration B

This concentration focuses on applied language studies. The requirements are:

1. 29.100, preferably in the First year.
2. 1.0 credit in general linguistics: 29.203★, and one of 29.201★, 29.302★, or 29.304★;
3. 2.0 credits in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★ of which at least 1.0 must be at the 300-level;
4. 2.5 additional credits from courses in Linguistics and Applied Language Studies, chosen in consultation with the Department;
5. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For the Combined Pass program, the requirements are:

1. 29.100, preferably in the First year.
2. 1.0 credit in general linguistics: 29.203★, and one of 29.201★, 29.302★, or 29.304★;
3. 1.5 credits in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★ of which at least 1.0 must be at the 300-level;
4. 0.5 additional credit from courses in Linguistics and Applied Language Studies, chosen in consultation with the Department.

Honours Programs

Concentration A

This concentration focuses on general linguistics. The requirements are:

1. 29.100;
2. 29.201★, 29.203★, 29.302★, 29.304★;
3. 1.0 credit in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★;
4. 1.0 credit chosen from 29.401★, 29.402★ or 29.409★;

5. 1.5 additional credits at the 400-level;

6. 3.0 additional credits in Linguistics and Applied Language Studies, chosen in consultation with the Department;

7. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For a Combined Honours program the requirements are:

1. Linguistics 29.100, 29.201★, 29.203★, 29.302★, 29.304★;
2. 1.0 credit from 29.401★, 29.402★ or 29.409★;
3. 2.0 additional credits in Linguistics and Applied Language Studies (including at least 0.5 credit at the 400-level);
4. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

Concentration B

This concentration focuses on applied language studies. The requirements are:

1. 29.100
2. 1.0 credit in general linguistics: 29.203★, and one of 29.201★, 29.302★, or 29.304★;
3. 2.0 credits in Applied Language Studies from 29.223★, 29.241★, 29.247, 29.273★, 29.274★, 29.275★, 29.276★, 29.341★, 29.375★, 29.376★, 29.393★ of which at least 1.0 must be at the 300-level;
4. 1.0 credit from 29.421★, 29.427★, 29.441★, 29.442★, 29.462★, 29.481★;
5. 1.5 additional credits at the 400-level;
6. 3.0 additional credits in Linguistics and Applied Language Studies, chosen in consultation with the Department;
7. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For a Combined Honours program the requirements are:

1. Linguistics 29.100, 29.203★, and one of 29.201★, 29.302★, or 29.304★;
2. 4.0 additional credits in Linguistics and Applied Language Studies (including at least 1.5 credits at the 400-level);
3. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For the Honours degree in Teaching English as a Second Language, students must complete:

1. Linguistics 29.100;
2. 29.203★, and one of 29.201★, 29.302★, or 29.304★;

3. all of 29.421★, 29.425, 29.426★, 29.427★, 29.462★ 29.481★, 29.482★;
4. 1.0 credit chosen from the following options, 29.223★, 29.247, 29.271★, 29.273★, 29.274★, 29.376★, or 29.496★;
5. plus 2.5 additional credits in Linguistics and Applied Language Studies.
6. A working knowledge of a language other than English, proficiency to be determined by successful completion of a university course in the language or by an oral or written test given by the Department.

For a Combined Honours degree in Linguistics and Russian (Translation Option) the requirements are:

Linguistics 29.100, 29.201★, 29.203★, 29.304★, 29.481★, 29.482★, 29.490, and the courses outlined in the requirements of the Russian department. In this program, the Tutorial in Linguistics will consist of directed readings in the theory of translation

(See p. 475).

Mention: français

Students in the Pass or Honours program in Linguistics may qualify for the notation "Mention: français" (p. 55) by fulfilling the requirements outlined below. Those wishing to pursue this path should consult with the Department's "Mention: français" adviser.

Linguistics courses presented in fulfilment of the "Mention: français" requirements can double as courses to satisfy Linguistics Pass or Honours requirements.

Students enrolling in courses at the University of Ottawa will do so through the University of Ottawa Exchange Program. To enrol in courses in French at another university, students must obtain a Letter of Permission. (See articles 3.10 and 3.12, p. 73.)

Pass or Combined Pass Programs (3.0 credits)

To graduate with the notation "Mention: français" students must include in their program the following:

1. 1.0 credit in French language chosen in consultation with the Department of French, for perfecting the students' command in French.
2. 1.0 credit linked to the study of the heritage and culture of French Canada taught in French at Carleton or the University of Ottawa. At Carleton: French 20.332; At the University of Ottawa: FRA 3799, LIN 2502, LIN 2505, LIN 3502, LIN 3503.
3. 1.0 credit in the area of linguistics taught in French at Carleton, at the University of Ottawa or at another university. At Carleton, 1.0 credit chosen from French 20.312, 20.432★, 20.433★, 20.434★, 20.435, Linguistics 29.397.
4. Combined Pass program students must meet the "Mention: français" requirements of both disciplines.

Honours and Combined Honours (4.0 credits)

To graduate with the notation "Mention: français" students must include in their program the following:

1. 1.0 credit in French language chosen in consultation with the Department of French, for perfecting the students' command in French.
2. 1.0 credit linked to the study of the heritage and

culture of French Canada taught in French at Carleton or the University of Ottawa. At Carleton: French 20.332; At the University of Ottawa: FRA 3799, LIN 2502, LIN 2505, LIN 3502, LIN 3503.

3. 1.0 credit in the area of linguistics taught in French at Carleton, at the University of Ottawa or at another university. At Carleton, 1.0 credit chosen from French 20.312, 20.432★, 20.433★, 20.434★, 20.435, 29.397.
4. 1.0 credit at the 400-level in the area of linguistics taught in French at Carleton, at the University of Ottawa or at another university. At Carleton, 1.0 credit chosen from French 20.432★, 20.433★, 20.434★, 20.435★ (if not taken during the Third year), Linguistics 29.497.

The focus of the tutorials (Linguistics 29.397 and 29.497) may be on any of the following topics: American Indian languages, sociolinguistique, bilinguisme, dialectologie, développement de la langue maternelle pendant les années scolaires, problèmes du bilinguisme scolaire, pragmatique, grammaire du texte, sémiotique, sémantique. All written work must be submitted in French.

5. Combined Honours students must meet the "Mention: français" requirements of both Honours disciplines.

Certificate in the Teaching of English as a Second Language (CTESL)

To receive the Certificate in the Teaching of English as a Second Language, the requirements are:

1. Linguistics 29.421★, 29.425, 29.426★, 29.462★, 29.481★, 29.482★;
2. either 29.376★ or 29.427★, and
3. 1.0 credit chosen from:
Linguistics 29.100, 29.223★, 29.247, 29.271★, 29.273★, 29.274★, 29.496★, or 29.376★ or 29.427★, (if not taken to meet requirement 1.)

A candidate for the Certificate must obtain a grade of C or better in all courses taken at Carleton University under the Certificate program. In addition, students in the CTESL program must be fluent in English, proficiency to be determined by an oral or written test given by the Department.

It should be noted that students cannot receive both a B.A. degree and a Certificate at the same time, nor can courses included in a B.A. or other degree be credited towards the certificate. If any of the foregoing Linguistics and Applied Language Studies courses are included in the B.A., then the student must choose other courses in Linguistics and Applied Language Studies in consultation with the Department. Students may take courses in other departments with the permission of the CTESL adviser. For more information, students should contact the Department.

Admission Requirements

Applicants are admitted on the recommendation of the Department of Linguistics and Applied Language Studies. Applicants have normally completed a first degree in another discipline, or a course of study in a teacher training college. Others with a strong aca-

demic background or with experience in the teaching of English as a second language may be admitted with permission of the Department. It should be noted that the number of student spaces in the program is limited. Thus, it may not be possible to grant admission to all applicants who meet the foregoing requirements. Admissions will, therefore, be on a selective basis with preference given to those candidates who show the highest promise of success in the program.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Linguistics 29.100

Introduction to Linguistics

Elementary principles and methods of descriptive analysis of language; phonetics; phonology; morphology; syntax. Survey of other areas of linguistics: historical linguistics, sociolinguistics, psycholinguistics, semantics, applied linguistics.

Lectures and discussions three hours a week.

Linguistics 29.201 ★

Phonetics

Recognition, description, transcription and production of speech sounds; systems of transcription; the nature of the speech-producing mechanism; the acoustics of speech sounds. (Also listed as Anthropology 54.221★.)

Precludes additional credit for Linguistics 29.301★ (no longer offered).

Prerequisite: Linguistics 29.100.

Lectures and discussion three hours per week.

Linguistics 29.203★

Language Analysis

Direction and practice in the analysis of grammatical material, including both morphology and syntax. Models for the description of grammatical regularities. Course work consists principally of practical exercises. (Also listed as Anthropology 54.223★.)

Precludes additional credit for Linguistics 29.303★ (no longer offered).

Prerequisite: Linguistics 29.100.

Lectures and discussion three hours a week.

Linguistics 29.223★

Linguistic Theory and Second-Language Learning

A critical study of linguistic theory and description applied to second-language learning. Includes a brief consideration of similarities and differences in first- and second-language development, bilingualism and types of linguistic error and their significance.

Lectures and discussion three hours a week.

Linguistics 29.232★

Semantics

The study of meaning as a part of the study of communication. Organization of the semantic struc-

ture of language, and the relation of this structure to the lexicon.

Lectures and discussion three hours a week.

Linguistics 29.241★

Language in Education

Insights from linguistics and applied language studies into the development of English as mother tongue during elementary and/or secondary education. Language, learning and cognitive development.

Precludes additional credit for Linguistics 29.295 and English 18.295 (both no longer offered).

Lectures and discussion three hours a week.

Linguistics 29.247

Writing: Theory and Practice

A study of the process of writing in theory and practice. Readings and discussions focus on the nature of the composing process; the development of writing abilities from the elementary years to maturity; the interrelationships between thinking and writing; strategies for encouraging growth in writing.

This course is chiefly intended for practicing or future teachers. It may meet on an irregular schedule. Classes may begin before the first week in September. (Also listed as English 18.297.)

Precludes additional credit for Linguistics 29.297 (no longer offered).

Prerequisite: Second-year standing or enrolment in either of the Certificate Program in English Language and Composition or the CTESL program.

Linguistics 29.263★

Child Language

This course will look at the milestones associated with the development of grammatical, pragmatic and metalinguistic competence from birth to about age ten, and at the relative contributions of the environment, cognitive development and inborn knowledge to this development.

Prerequisite: Linguistics 29.100.

Lectures and discussion three hours per week.

Linguistics 29.264★

Speech and Language Problems

An examination of the congenital, developmental and acquired disorders of language, speech and voice; prevalences, types, causes and effects; related research.

Lectures and discussion three hours a week.

Linguistics 29.271★

Sociolinguistics

The place of language within society; bilingual and multilingual communities; language, social mobility and social stratification; sociolinguistic factors in language change.

Lectures and discussion three hours a week.

Linguistics 29.273★

Gender and Language

A course that considers the influence of gender on language and the way in which language reflects society's view of gender. Topics covered include: gender differences in language use and in discourse, gender-bias in language, and the role of language in socializing for gender.

Prerequisite: Second-year standing.

Lectures and discussion three hours a week.

Linguistics 29.274★

Bilingualism

The linguistic nature of bilingualism. The structure of bilingual societies and the relation between societal and individual bilingualism. The role of bilingualism in language education.

Prerequisite: Second-year standing.

Lectures and discussion three hours a week.

Linguistics 29.275★

Language, Ideology and Power

This course will examine the ways in which different social conditions determine a variety of properties of language in use. Attention will be paid in particular to the linguistic resources for expressing ideological beliefs and for maintaining and reinforcing existing power structures in different institutional and social sites. (Also listed as Sociology/Anthropology 56.215★.)

Lectures and discussion three hours a week.

Linguistics 29.276★

Conversational Analysis

Methods and theory for analysing ordinary talk. Differences between language in conversation and formal spoken and written language. The relation of conversational analysis to other approaches to studying language. The connection between conversational analysis and studies of interaction. (Also listed as Sociology/Anthropology 56.216★.)

Lectures and discussion three hours a week.

Linguistics 29.280

Language and Communication

This course introduces some of the central topics in the study of language and communication as pursued by linguists and philosophers. Topics will likely include: the nature of language and communication; the nature of meaning; the relationship between syntax, semantics and pragmatics; the connections between logic, language and thought; language as a social activity. Typically the readings include works by Austin, Davidson, Chomsky, Frege, Grice, Kripke, Russell and Searle. (Also listed as Philosophy 32.280 and Mass Communication 27.280.)

Prerequisite: Second-year standing.

Lectures and discussion three hours a week.

Linguistics 29.302★

Phonology

The sound-systems of languages; methods for the analysis and description of phonological structure. The course concentrates on generative theory with comparisons to other theories. (Also listed as Anthropology 54.302★.)

Prerequisite: Linguistics 29.201★.

Lectures and discussion three hours a week.

Linguistics 29.304★

Grammatical Theory

Comparison of major current schools of linguistics. Theories of grammatical structure. The testing of grammatical hypotheses. Grammatical structure and meaning. Course work consists principally of lectures and readings. (Also listed as Anthropology 54.304★.)

Prerequisite: Linguistics 29.203★.

Lectures and discussion three hours a week.

Linguistics 29.311★

Historical Linguistics

Principles and methods of the historical analysis of languages; the comparative method; internal reconstruction; sound change; rule change; the philological method; problems in historical analysis.

Precludes additional credit for Linguistics 29.211★ (no longer offered).

Prerequisite: Linguistics 29.100.

Lectures and discussion three hours a week.

Linguistics 29.341★

Language and Work

The course reviews research on the written and spoken language of the workplace, with an emphasis on how people participate through language in generating ideas, solving problems, carrying out tasks and creating, maintaining, modifying and subverting social relations within work contexts. Students collect and analyse examples of workplace discourse.

Precludes additional credit for Linguistics 29.392★ (if taken in 1994-95).

Lectures and discussion three hours a week.

Linguistics 29.361★

Psycholinguistics

Language performance and language use; the production and perception of language; psychological processes involved in speech performance; the relevance of these questions to linguistic theory.

Precludes additional credit for Linguistics 29.261★ (no longer offered).

Prerequisite: Linguistics 29.100.

Lectures and discussion three hours a week.

Linguistics 29.375★

Adult Literacy

The extent and social contexts of restricted literacy in Canadian society; approaches to and debates surrounding the teaching and learning of adult literacy.

Prerequisite: Third- or Fourth-year standing in Linguistics and Applied Language Studies.

Precludes additional credit for Linguistics 29.496★ (offered in 1994-95, 1995-96).

Lectures and discussion three hours a week.

Linguistics 29.376★

Discourse Analysis

Principles of and studies in discourse analysis, including both conversational and textual/documentary analysis. The major focus is on language use in structuring social relationships.

Precludes additional credit for Linguistics 29.423★ (no longer offered).

Prerequisite: Third- or Fourth-year standing in Linguistics and Applied Language Studies or enrolment in the CTESL program.

Lectures and discussion three hours a week.

Linguistics 29.390

Independent Study

Research under the supervision of a member of the Department. Normally available only to Third- and Fourth-year students in Linguistics and Applied Language Studies.

Prerequisite: Permission of the Department.

Linguistics 29.391★**Independent Study**

Research under the supervision of a member of the Department. Normally available only to Third- and Fourth-year students in Linguistics and Applied Language Studies.

Prerequisite: Permission of the Department.

Linguistics 29.393★**Special Topics in Linguistics and Applied Language Studies**

Selected topics in Linguistics and Applied Language Studies not ordinarily treated in the regular course program. Contents of this course vary from year to year.

Prerequisite: Linguistics 29.100 or permission of the Department

Lectures and discussion three hours a week.

Linguistics 29.397**Etudes dirigées**

Un programme de lectures ou de recherche et de travaux écrits dirigé par un membre du département. Les projets de recherche peuvent être organisés soit comme *tutorial* pour un(e) seul(e) étudiant(e) soit comme séminaire pour un groupe d'étudiants. Il n'y a pas plus d'un séminaire par année.

For Third- or Fourth-year Linguistics students of "Mention: français" only.

Prerequisite: Permission of the Department.

Linguistics 29.401★**Advanced Phonology**

A continuation of Linguistics 29.302★. Among topics covered: the methodological problems of phonology, the problems of markedness and natural rules, ordering, abstractness, and other current theoretical developments.

Prerequisite: Linguistics 29.302★ or permission of the Department.

Lectures and discussion three hours a week.

Linguistics 29.402★**Advanced Grammar**

A continuation of Linguistics 29.304★. Among topics covered: global rules, clause movement, constraints, trace theory and other current developments in syntactic analysis.

Prerequisite: Linguistics 29.304★ or permission of the Department.

Lectures and discussion three hours a week.

Linguistics 29.403★**Philosophy of Language**

(Also listed as Philosophy 32.401★).

Prerequisite: Fourth-year Honours standing in Linguistics and Applied Language Studies or Philosophy or permission of either Department.

Linguistics 29.409★**Topics in General Linguistics**

A course devoted to an examination of a topic or more specialized area in linguistics or language study. This course may be taken more than once.

Prerequisite: Third- or Fourth-year standing in Linguistics and Applied Language Studies or permission of the Department.

Lectures and discussion three hours a week.

Linguistics 29.421★**Language Testing**

The principles of test construction as applied to testing language proficiency, achievement and aptitude. Structural, notional, discrete point and integrative tests are covered. Students are expected to create, analyse and evaluate language tests.

Prerequisite: Third- or Fourth-year standing in Linguistics, in Linguistics and Applied Language Studies, or in Teaching English as a Second Language, or enrolment in the CTESL program.

Lectures and discussion three hours a week.

Linguistics 29.425**Teaching English as a Second Language: Methodology**

Classification of classroom teaching materials and adaptation of teaching materials for particular situations; creation of teaching materials; teaching techniques and strategies. This course is normally taken with Linguistics 29.426★.

Prerequisite: Third- or Fourth-year standing in Linguistics, in Linguistics and Applied Language Studies, or in Teaching English as a Second Language, or enrolment in the CTESL program.

Lectures and discussion three hours a week.

Linguistics 29.426★**Practicum in Teaching English as a Second Language: Experience in an ESL teaching situation**

Students have the opportunity to integrate the more academic dimension of the program with practical work. Students may tutor individual ESL students, help with the preparation of teaching materials or teach classes. The course is graded *S* or *Uns*. The course extends over both Fall and Winter terms, normally taken concurrently with Linguistics 29.425.

Prerequisite: Third- or Fourth-year standing in Linguistics, in Linguistics and Applied Language Studies, or in Teaching English as a Second Language, or enrolment in the CTESL program.

Linguistics 29.427★**ESL Literacy**

The nature of everyday literacy and literacy skills, with an emphasis on analyzing the structure of everyday literacy texts and demands. Issues in literacy for second-language learners who may or may not have literacy skills in their first language.

Prerequisite: Third- or Fourth-year standing in Linguistics, in Linguistics and Applied Language Studies, or in Teaching English as a Second Language, or enrolment in the CTESL program.

Lectures and discussion three hours a week.

Linguistics 29.441★**Rhetoric and Argument in the Human, Social and Natural Sciences**

This course probes the degree to which rhetorical considerations shape the construction of arguments within disciplinary communities. Considerable contemporary research reveals how disciplinary and socio-historical conditions shape scientific communities' criteria for what will be accepted as persuasive. Students will be expected to perform analysis of their own fields of inquiry.

Precludes additional credit for Linguistics 29.495 and English 18.495 (both no longer offered).

Prerequisite: Third- or Fourth-year standing.
Lectures and discussion three hours a week.

Linguistics 29.442★

Learning Across the Disciplines: A Research Practicum

This course is intended for practising teachers or teaching assistants. The focus is on theory about and research into the role of language in learning and pedagogic situations which optimize that relationship. Students will be expected to perform teacher-research related to their teaching, within the context of the theory presented in this course.

Precludes additional credit for Linguistics 29.495 and English 29.495 (both no longer offered).

Prerequisite: Third- or Fourth-year standing.
Lectures and discussion three hours a week.

Linguistics 29.462★

Second-Language Acquisition

Current models of second-language acquisition and learning with an emphasis on empirical studies. Universals of second-language acquisition.

Prerequisite: Third- or Fourth-year standing in Linguistics, in Linguistics and Applied Language Studies, or in Teaching English as a Second Language, or enrolment in the CTESL program.

Lectures and discussion three hours a week.

Linguistics 29.481★

Major Structures of English

This course is intended to familiarize students with the structure of the English language, highlighting important contrasts between English and other languages as well as grammatical difficulties for ESL learners.

Precludes additional credit for Linguistics 29.485 (no longer offered).

Prerequisites: Enrolment in the CTESL program or Fourth-year standing and Linguistics 29.100.

Lectures and discussion three hours a week.

Linguistics 29.482★

Language Contact and Language Spread

This course will consider the development and spread of creoles and pidgins, introduce principles of language policy and planning, and analyze the emergence of New Englishes.

Precludes additional credit for Linguistics 29.485 (no longer offered).

Prerequisites: Enrolment in the CTESL Program or Fourth-year standing and Linguistics 29.100.

Lectures and discussion three hours a week.

Linguistics 29.490

Tutorial in Linguistics

A course designed to permit students to pursue their interests in a selected area of linguistics. Students prepare papers as a basis for discussion with the tutor. The topic of study must have the prior approval of the tutor and the Department. The course is available only to Fourth-year Honours students, and may be taken only once.

Prerequisite: Permission of the Department.

Linguistics 29.491★

Tutorial in Linguistics

A course designed to permit students to pursue their interests in a selected area of linguistics. Students prepare papers as a basis for discussion with the tutor. The topic of study must have the prior approval of the tutor and the Department. The course is available only to Fourth-year Honours students, and may be taken only once.

Prerequisite: Permission of the Department.

Linguistics 29.496★

Selected Topics in Applied Language Studies

Selected topics in applied language studies. Contents of this course vary from year to year.

Prerequisite: Third-or Fourth-year standing or enrolment in the CTESL program.

Lectures and discussion three hours a week.

Linguistics 29.497

Etudes dirigées

Etudes spécialisées en linguistique. Préparation d'un travail écrit ou d'une mémoire sur un sujet choisi par l'étudiant(e) en collaboration avec le directeur du *tutorial* et approuvé par le département.

For Fourth-year Linguistics students of "Mention: français" only.

Prerequisite: Permission of the Department.

Linguistics 29.499

Honours Essay

During their Fourth year, students in the Department of Linguistics and Applied Language Studies may present a major research essay. A GPA of 9.0 or better in Linguistics and Applied Language Studies courses is required. The subject for research is settled in consultation with the department. The Honours Research Essay is carried out under the direction of a faculty supervisor who is either chosen by the candidate or assigned early in the year. The Honours essay is evaluated by both the supervisor and an appointed reader.

Prerequisites: Fourth-year standing in Linguistics and Applied Language Studies and permission of the Department.

Tutorial hours arranged.

(Arts)

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Academic Administration

Associate Director, School of Journalism and Communication
Paul Attallah

Supervisor of Graduate Studies
Michael Dorland

Bachelor of Arts in Mass Communication

The School of Journalism and Communication offers Pass and Honours undergraduate programs in Mass Communication. (See p. 352.) Candidates for the Pass program are required to take a minimum of 15.0 credits and those in the Honours program 20.0 credits. The Mass Communication programs are provided for students with broad interests in mass communication in contemporary society who do not intend to pursue careers as professional journalists. The Honours degree is designed for students who intend to do graduate work in communication or a related field.

Graduate Program

The School of Journalism and Communication offers studies leading to the degree of Master of Arts in Communication. For further details consult the *Graduate Studies and Research Calendar*.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all regulations and requirements of the School of Journalism and Communication as set out below.

Admission and Continuation Requirements

Admission and continuation requirements in the two programs are those set by the Faculty of Arts. Admission to Second year will be guaranteed only to students who complete 5.0 credits in First year, achieve a grade of *B-* or better in Mass Communication 27.111 and also achieve a CI of 7.00. The CI is calculated by dividing the total grade points accumulated over all attempts by the total number of attempts. The calculation is carried to two decimal

places without rounding. For further information on calculation of the CI, see p. 78.

The School also maintains a number of places in Second year for students who wish to transfer from Carleton University or elsewhere. These spaces are limited and it may not be possible to grant admission to all applicants. Admission will therefore be on a selective basis with preference given to those candidates who show the highest promise of success. Normally, offers are made to students with an overall GPA of 10.0 or better.

Pass Program

The requirements for a Pass program in Mass Communication include 6.0 credits in Mass Communication:

1. Mass Communication 27.111, 27.201, 27.211, 27.311;
2. 2.0 credits chosen from Mass Communication 27.280, 27.290, 27.305★, 27.306★, 27.342★, 27.343★, 27.346★, 27.348★, 27.351★, 27.352★, 27.355★, 27.357★;
3. 9.0 elective credits.

Combined Pass Program

The requirements for a Combined Pass program including Mass Communication are requirement 1 and 1.0 credit from requirement 2 of the Pass program.

Honours Program

A candidate for a B.A. with Honours in Mass Communication requires 9.0 credits in Mass Communication. The requirements are:

1. Mass Communication 27.111, 27.201, 27.211, 27.311;
2. 2.0 credits chosen from Mass Communication 27.280, 27.290, 27.305★, 27.306★, 27.342★, 27.343★, 27.346★, 27.348★, 27.351★, 27.352★, 27.355★, 27.357★;
3. 3.0 credits chosen from Mass Communication 27.400★, 27.402★, 27.410★, 27.412★, 27.430★, 27.432★, 27.450★, 27.451★, 27.497;
4. 11.0 elective credits.

Recommended sequence for B.A. Honours in Mass Communication

First Year

Mass Communication 27.111;
4.0 elective credits.

Second Year

Mass Communication 27.201, 27.211;
3.0 elective credits.

Third Year

Mass Communication 27.311;
2.0 credits chosen from Mass Communication 27.280, 27.290, 27.305★, 27.306★, 27.342★, 27.343★, 27.346★, 27.348★, 27.351★, 27.352★, 27.355★, 27.357★;
2.0 elective credits.

Fourth Year

3.0 credits chosen from Mass Communication 27.400★, 27.402★, 27.410★, 27.412★, 27.430★, 27.432★, 27.450★, 27.451★, 27.497; 2.0 elective credits.

Combined Honours

Students taking Combined Honours in Mass Communication and another discipline are required to take the following credits:

1. Mass Communication 27.111, 27.201, 27.211, 27.311;
2. 1.0 other 200- or 300-level Mass Communication credit;
3. 2.0 credits chosen from Mass Communication 27.400★, 27.402★, 27.410★, 27.412★, 27.430★, 27.432★, 27.450★, 27.451★, 27.497.

Combined Honours in Journalism and Mass Communication

Course requirements are:

1. For students admitted to Journalism from 1995-96 on, Journalism 28.100, 28.221, 28.225★, 28.251★, 28.325, 28.326, 28.400, 28.421, and two of 28.425★, 28.426★, 28.427★, 28.428★.

Students admitted to Journalism prior to 1995-96 should consult the School of Journalism and Communication for requirements.

2. Mass Communication 27.201, 27.211, 27.311, and 2.0 credits chosen from Mass Communication 27.400★, 27.402★, 27.410★, 27.412★, 27.430★, 27.432★, 27.450★, 27.451★, 27.497;
3. 1.0 French language credit (acceptable 100-level French courses are any of French 20.120, 20.130, 20.140, and 20.150).
4. 1.0 approved credit in Canadian history. (Students who expect to practise journalism in another country may be advised to choose a different history course and must seek permission to do so from the Supervisor of Undergraduate Studies, Journalism.);
5. Approved options to make up a program total of 20 credits (20.5 credits if admitted prior to 1995-96).

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Mass Communication 27.111

Introduction to Mass Communication

An examination of some of the major reasons for the emergence in the twentieth century of Mass Communication as a field of study, with discussion of main research trends: the historical development of newspapers, magazines, radio, television, and other mass media; modern mass media structures and their relationship to social and cultural changes; and basic

issues related to communication and cultural policy. Lectures and discussion groups three hours a week.

Mass Communication 27.201

Media Research

An introduction to methods in media and communication research. The objectives of the course are to develop an understanding of the research process and research design. The course normally includes the following methodological approaches: statistical and computer analysis, field research methods, policy and document analysis, historical/archival research.

Prerequisites: Mass Communication 27.111 or Journalism 28.100 as well as Pass or Honours standing in Mass Communication or permission of the School. Lecture two hours a week, laboratory one hour a week.

Mass Communication 27.211

The Mass Media in Modern Society

An examination of the historical development and current operations of the major mass media, with a view to relating developments to the larger social structure. Emphasis is on the relationship between the media and the structure of Canadian society.

Prerequisites: Mass Communication 27.111 and Pass or Honours standing in Mass Communication or permission of the School.

Lectures and discussion three hours a week.

Mass Communication 27.251★

Communications Law I

A survey of the general laws that affect the mass media in Canada and how they impact on freedom of expression and of the press. Specific areas of examination include the development of freedom of expression in Canadian constitutional law, the impact of the Charter of Rights and Freedoms, statutory limits on freedom of the press, contempt of court and civil defamation. (Also listed as Journalism 28.251★.)

Precludes additional credit for Mass Communication 27.351★, Journalism 28.351★ or Law 51.351★ (last offered 1996-97).

Prerequisite: Mass Communication 27.111 or Journalism 28.100 or permission of the School.

Lectures and discussion three hours a week.

First offered in 1996-97.

Mass Communication 27.280

Language and Communication

This course introduces some of the central topics in the study of language and communication, as pursued by linguists and philosophers. Topics will likely include: the nature of language and communication; the nature of meanings; the relationship between syntax, semantics and pragmatics; the connections between logic, language and thought; language as a social activity. Typically, the readings include works by Austin, Davidson, Chomsky, Frege, Grice, Kripke, Russell and Searle. (Also listed as Philosophy 32.280 and Linguistics 29.280.)

Prerequisite: Second-year standing.

Lectures and discussion three hours a week.

Mass Communication 27.290

Truth and Propaganda

A study of techniques, some ancient as well as modern, for influencing public opinion. The ethics of

various attempts to control, affect or modify mass consciousness, under circumstances of wartime or peace, by the state, political parties, commercial interests or pressure groups, are discussed. Attention is paid to definition of key terms such as "propaganda," "manipulation," and the like, in the light of shifting nuances of different times and usages. The problem of arriving at a satisfactory definition of "truth" to compare or contrast with "propaganda" is one focal point of investigation. The values of an open society, as against those promoted by closed societies, also receive attention, account being taken of subtler as well as more obvious forms of censorship, and of external as well as internal attempts to influence or subvert public consciousness in a given society. (Also listed as Philosophy 32.290.)

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Mass Communication 27.305★

International Media Systems

This course is concerned with the flow of world news - how it is collected, transmitted, received, selected, edited and distributed; how it informs or inhibits our views of the world around us. It examines the relationship and dependence of Canadian media on regional and international institutions and systems. It examines such items as media systems; the role of international news agencies; the role of global telecommunication systems; the foreign news-gathering operations of national radio and television networks, and the inter-network arrangements for news distribution; the role of supranational media institutions such as UNESCO, the International Press Institute, the Inter-American Press Association and the International Organization of Journalists; the role of regional distribution agencies such as Intervention, Eurovision, European Broadcasting Union, Asian Broadcasting Union. (Also listed as Journalism 28.305★.)

Prerequisite: Mass Communication 27.211 as well as Pass or Honours standing in Mass Communication, or Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Mass Communication 27.306★

Comparative Media Studies

This course is concerned with comparisons of media content, organization or operation. Comparisons may be cross-cultural in nature (i.e. comparisons of English and French-Canadian media content), cross-media (i.e. comparisons of broadcast and print media organizations), cross-national (i.e. comparisons of media operations in various countries) or a mixture of these. There may also be comparisons over time. Some time is spent examining and employing research tools and methods used in these studies. (Also listed as Journalism 28.306★.)

Prerequisite: Mass Communication 27.211 as well as Pass or Honours standing in Mass Communication, or Third- or Fourth-year B.J. (Hons.) standing, or permission of the School.

Mass Communication 27.311

Advanced Study of the Mass Media

An examination of the philosophical and theoretical foundations of mass communication studies. The course is an analysis of the content of selected

theories with a view to assessing the contributions they make to the understanding of mass communication.

Prerequisites: Mass Communication 27.211 and Pass or Honours standing in Mass Communication or permission of the School.

Lecture and discussion groups three hours a week.

Mass Communication 27.342★

On Television

This course examines the television medium as it was formed historically, both as a social institution and as a technological form. Various methods by which television texts might be analysed are presented, and different genres are compared and discussed.

Prerequisite: Mass Communication 27.211 or permission of the School.

Lectures and discussion three hours a week.

Mass Communication 27.343★

Communication Technology and Culture

An examination of the relationship between communication technology and society. The course examines the factors that contribute to changes in the collection, storage and distribution of information and their cultural implications.

Prerequisite: Mass Communication 27.211 or permission of the School.

Seminar three hours a week.

Mass Communication 27.346★

Media Construction and Social Issues

A study of the industrial-bureaucratic structures of the news media and their relevance to the reporting of social and political issues; an examination of the dominant discourses on these issues and their relevance for the organization of newswork. The issues vary from year to year.

Prerequisite: Mass Communication 27.211 or permission of the School.

Lectures and discussion three hours a week.

Mass Communication 27.348★

Advertising: A Critical Perspective

This course explores and critically analyzes some of the major constructs and basic mechanisms of the advertising system. This will include an examination of the social, political-economic and cultural implications of advertising.

Prerequisite: Mass Communication 27.211 or permission of the School.

Lecture three hours a week.

Mass Communication 27.351★

Communications Law I

This course is concerned with the general laws governing the mass media in Canada, with attention to their effect on freedom of expression. Specific topics for examination include: the development of freedom of expression and of the press in Canadian constitutional law, including the effects of the Charter of Rights and Freedoms; statutory limits on freedom of expression and of the press; contempt of court; civil defamation; and privacy. (Also listed as Journalism 28.351★ and Law 51.351★.)

Prerequisite: Mass Communication 27.111, Journalism 28.100, or Law 51.100, or permission of the School.

Lectures and discussion three hours a week.
Last offered in 1996-97.

Mass Communication 27.352★
Communications Law II

The law as it affects the Canadian broadcasting and communications industry. The primary focus of the course is on the operations of the Canadian Radio-Television and Telecommunications Commission. Specific topics for examination may include: administrative formulation of policy; multiple, monopoly and foreign ownership; control of program content (violence, obscenity, "good taste," food and drug commercials, liquor advertising, indirect censorship); controlling program quality; the provision of a right of access to the media; cablevision licensing and control; alternative sanctions. (Also listed as Journalism 28.352★ and Law 51.352★.)

Prerequisite: Mass Communication 27.111, Journalism 28.100, or Law 51.100, or permission of the School.

Lectures and discussion three hours a week.

Mass Communication 27.355★
Media and Gender

An examination of the role of mass media in shaping our conceptions of gender roles, and an evaluation of the social, political and cultural consequences of such conceptions. Topics to be considered include: male and female images in media content; the relative status of men and women within media professions; organizational and institutional factors in the treatment of gender; regulatory policies and possibilities concerning the gender issue within media institutions.

Prerequisite: Mass Communication 27.211 or permission of the School.

Lectures and discussion three hours a week.

Mass Communication 27.357★
Special Topic

An examination of a special topic in mass communication not covered in depth in other courses. The topic varies from year to year. Possible topics include: communications policy analysis; the political economy of the mass media; and the social impact of new communications technology.

Prerequisite: Mass Communication 27.211 or permission of the School.

Mass Communication 27.400★
Advanced Media Research: Quantitative Methods

An advanced study of specific methodological issues and statistical techniques appropriate to the investigation of theoretical questions concerning mass communication and society. The course is primarily concerned with the selection of appropriate methodologies and models for investigating specific questions, and for this reason the content of the seminar changes somewhat from year to year. This course deals with advanced statistical methods appropriate in the context of mass communication studies.

Precludes additional credit for Mass Communication 27.401 (no longer offered).

Prerequisites: Mass Communication 27.201, 27.311 and Honours standing in Mass Communication or permission of the School.

Mass Communication 27.402★

Advanced Media Research: Qualitative Methods
An advanced study of specific methodological issues appropriate to the investigation of theoretical questions concerning mass communication and society. The course is primarily concerned with the selection of appropriate methodologies and models for investigating specific questions and for this reason the content of the seminar changes somewhat from year to year. Topics to be considered may include field research methods, policy/document analysis, historical research.

Precludes additional credit for Mass Communication 27.401 (no longer offered).

Prerequisites: Mass Communication 27.201, 27.311 and Honours standing in Mass Communication or permission of the School.

Mass Communication 27.410★

Selected Topics in Mass Communication Analysis

Selected topics in mass communication, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Topic for 1996-97: Canadian Civil Culture: The Rhetoric of Communication Institutions. A seminar in historical research, the course proposes to examine the historical development of the major Canadian institutions of communication, with particular attention to changes in rhetorical practices since the early modern period. Emphasis on the evolution of parliamentary institutions, the legal system, religious and educational institutions in the British, French, and American contexts in their impact upon Canada.

Precludes additional credit for Mass Communication 27.411 (no longer offered).

Prerequisite: Mass Communication 27.311 and Honours standing in Mass Communication or permission of the School.

Seminar three hours a week.

Mass Communication 27.412★

Selected Topics in Mass Communication Analysis

Selected topics in mass communication, not ordinarily treated in the regular course program. The choice of topics varies from year to year.

Topic for 1996-97: Children, Youth and Media. This course addresses the subject of children and youth as it relates to questions of mass media and popular culture. It will examine theoretically and historically the emergence of children as a social category within the mass media, both in terms of their social construction and portrayal and as a market for cultural goods. As this is a seminar course, students are required to conduct and present research on a range of issues, including the following: race and gender considerations in terms of television programming for children, the impact of new communication technology on children and youth, questions of regulatory control and intervention, adolescent magazine culture, the media violence debates, and the appearance and nature of children's media advocacy groups.

Precludes additional credit for Mass Communication 27.411 (no longer offered).

Prerequisites: Mass Communication 27.311 and Honours standing in Mass Communication or permission of the School.

Seminar three hours a week.

Mass Communication 27.430★**Communication Policy: Theory and Foundations**

This course examines theoretical perspectives on the role and context of communication and cultural policy in modern Canadian society. It introduces students to basic concepts necessary to explain the role of the State in capitalist society. It explores alternative frameworks for understanding the production and legitimation of communication and cultural policy as a type of State action. (Also listed as Sociology-Anthropology 56.430★.)

Precludes additional credit for Mass Communication 27.431 and Sociology-Anthropology 56.431 (no longer offered), and Mass Communication 27.411 or Sociology-Anthropology 56.411 (taken prior to 1986-87).

Prerequisites: Mass Communication 27.311 or Sociology-Anthropology 56.311 and Honours standing in Mass Communication or permission of the School. Seminar three hours a week.

Mass Communication 27.432★**Communication Policy: Institutions and Practices**

This course examines concrete examples of selected policy practices in the communication and cultural policy field and relates them to the institutions, agencies, actors and social interests shaping the policy formation process in Canada. (Also listed as Sociology-Anthropology 56.432★.)

Precludes additional credit for Mass Communication 27.431 and Sociology-Anthropology 56.431 (no longer offered), and Mass Communication 27.411 or Sociology-Anthropology 56.411 (taken prior to 1986-87).

Prerequisites: Mass Communication 27.430★ or Sociology-Anthropology 56.430★ and Honours standing in Mass Communication or permission of the School.

Seminar three hours a week.

Mass Communication 27.450★**Mass Media and Capitalist Democracy I**

An examination of the relationship between the rise and expansion of the mass media and the political, economic and cultural development of Europe and North America from the early nineteenth century to the Second World War. Consideration is given to the interaction between the mass media and processes such as democratization, industrialization, urbanization, imperialism, mass consumption, and the growth of corporate capitalism.

Prerequisites: Mass Communication 27.311 and Honours standing in Mass Communication or permission of the School.

Mass Communication 27.451★**Mass Media and Capitalist Democracy II**

A continuation of Mass Communication 27.450★, focusing on the period from the Second World War to the present day.

Prerequisite: Mass Communication 27.450★ or permission of the School.

Mass Communication 27.497**Honours Essay**

The Honours Essay, which is a major research essay, is carried out under the direction of a faculty supervisor. The Honours Essay is evaluated by both the supervisor and an appointed reader.

Prerequisite: Fourth-year Honours standing in Mass Communication.*

*Students should refer to general Faculty of Arts regulations regarding submission of Honours Essays. (See p. 76.)

(Science/Social Sciences)

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B. Szyszkowicz (NSERC Women's Faculty Award Holder)

Adjunct Research Professors

D. Krewski (Health Canada)

S.A. Naimpally

P. Révész (Academy of Sciences, Hungary)

A.B. Singh (Statistics Canada)

Sessional Lecturers

M. Hurd

W. Li

P. Mandl

A. Woodside

Programs in Mathematics and Statistics

The Department of Mathematics and Statistics offers a wide variety of programs ranging from those giving a strong training in the theoretical aspects of mathematics and statistics to those which emphasize applications to industry and government.

The Department offers both Major/Pass and Honours programs leading to either the B.Sc. or the B.A. degree. The following is a list and short description of the programs which are available:

Mathematics (Honours and Major/Pass B.Sc. and B.A.)

The Major/Pass programs are generally less theoretical than the Honours programs which may form an excellent introduction to graduate studies. The main areas of concentration are: algebra, analysis, topology, applied mathematics (classical and modern), statistics and probability.

Computer Mathematics (Honours and Major/Pass B.Sc. and B.A.)

The programs in computer mathematics are designed to provide a student with a background of computer-related mathematical ideas together with a firm base of computer science. These programs are of interest to students who are preparing for careers in government, industry, management, or systems analysis.

Statistics (Honours and Major/Pass B.Sc. and B.A.)

The Major/Pass program (B.Sc. or B.A.) in Statistics provides the academic groundwork for employment opportunities at the junior methodologist level, in a variety of statistics-related fields. The Honours program (B.Sc. or B.A.) is designed primarily for a stu-

dent who wishes to prepare for a career as a professional statistician.

Operations Research (Honours B.Sc. and B.A.)

The following Combined Honours programs may be of particular interest:

Economics and Mathematics (Honours B.A.)

Economics and Statistics (Honours B.A.)

Mathematics and Philosophy (Honours B.A.)

Computer Science and Mathematics (Honours B.Sc.)

The Combined Honours program in Computer Science and Mathematics is a limited-enrolment program resembling the Bachelor of Computer Science program, placing equal emphasis on computer science and mathematics. There are two options available for concentration, namely:

Computing Theory and Numerical Methods

Statistics and Computing

Geology and Statistics (Honours B.Sc.)

Mathematics and Physics (Double Honours B.Sc.)

Combined B.A./M.Sc. and Combined B.Sc./M.Sc. in Mathematics, or in Statistics

This program is designed as a "fast-track" to enable exceptional students to graduate in four years, either with both a B.A. and an M.Sc. degree, or with both a B.Sc. and an M.Sc. degree.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (Arts and Social Sciences, see p. 81; Science, see p. 106) in addition to all departmental regulations and requirements as set out below.

Note:

For students in the following programs, graduation requirements include both of the following GPAs:

B.Sc. (Major) or B.A. (Pass) program in Computer Mathematics:

- (i) a GPA of 4.0 or better on the minimum of 6.0 required credits in mathematics; and
- (ii) a GPA of 4.0 or better on the minimum of 10.0 credits in mathematics and computer science.

B.Sc. (Major) or B.A. (Pass) program in Statistics:

- (i) a GPA of 4.0 or better on the minimum of 6.0 credits in Mathematics; and
- (ii) a GPA of 4.0 or better on the minimum of 3.5 credits in Statistics (Mathematics 69.257★, 69.259★, 69.350, 69.353★, 69.354★, and 69.357★).

Combined Pass B.A. program with Statistics:

- (i) a GPA of 4.0 or better on the minimum of 5.5

credits in Mathematics; and

- (ii) a GPA of 4.0 or better on the minimum of 3.0 credits in Statistics (Mathematics 69.257★, 69.259★, 69.350, 69.353★, and one of 69.354★ or 69.357★).

B.Sc. Honours or B.A. program in Computer Mathematics:

- (i) a GPA of 6.5 or better on the minimum of 11.0 required credits in mathematics; and
- (ii) a GPA of 6.5 or better on the minimum of 11.0 credits in mathematics and 3.0 credits in computer science.

B.Sc. Honours or B.A. program in Statistics:

- (i) a GPA of 6.5 or better on the minimum of 11.0 credits in Mathematics and 1.0 credit in Computer Science; and
- (ii) a GPA of 6.5 or better on the minimum of 4.5 credits in Statistics (Mathematics 70.259★, 70.350, 70.355★, 70.356★, 70.450★, and the 1.5 credits selected from 70.451★ to 70.459★).

Combined Honours B.A. program in Economics and Statistics:

- (i) a GPA of 6.5 or better on the required 8.5 credits in Mathematics and Statistics and 1.0 credit in Computer Science; and
- (ii) a GPA of 6.5 or better on the required 3.0 credits in Statistics (Mathematics 70.259★, 70.350, 70.355★, 70.452★, 70.453★).

For students in Honours programs:

The designation of Honours degree will be determined by the student's GPA on all required credits in the Honours subjects, as stated in the program requirements; however, the Department may use discretion in counting the number of Honours credits, where students have more than the minimum number of required credits.

For students in the Combined Honours programs:

The designation of Honours degree will be determined by the student's GPA on all required credits in the two Honours subjects, as stated in the respective program requirements; however, the departments may use discretion in counting the number of Honours credits, where students have more than the minimum number of required credits.

For students in the Double Honours program in Mathematics and Physics:

The designation of Honours degree will be determined by the GPA on all required credits in the two Honours subjects, as stated in the program requirements.

Course Substitution regarding Economics 43.220:

Students registered in any Mathematics or Statistics undergraduate program, (except B.A. (Honours) Combined Economics and Mathematics), may not take Economics 43.220 for credit.

Students who have already completed Economics 43.220, and who wish to enter a Mathematics or Statistics program, may be exempted from taking Mathematics 69.257★ and 69.259★ only with per-

mission of the Department of Mathematics and Statistics, and provided the grade in Economics 43.220 is B- or better.

Courses excluded for credit in all programs offered by the Department of Mathematics and Statistics

The following courses may not be taken for academic credit (even as free electives) in any program offered by the Department of Mathematics and Statistics:

Economics 43.240★, 43.404★; Business 42.230★; Political Science 47.270; Psychology 49.200, 49.300; Social Sciences 03.401★, 03.402★; Social Work 52.250, 52.351★, 52.352★; Sociology/Anthropology 53.203, 54.203, 53.370, 53.403★, 53.404★, 56.450★.

It is understood that a student who has already taken one or more of these courses prior to July 1, 1996 will retain credit for these courses.

First-Year Course Selection

1. Mathematics 69.102, 69.112 (students in the Faculties of Arts, Social Sciences or Science). This choice is required of students in First year who are in a Mathematics program;
2. Fall term: Mathematics 69.104★; Winter term: Mathematics 69.114★ (students in the Faculty of Engineering or in the School of Computer Science);
3. Fall term: Mathematics 69.107★; Winter term: Mathematics 69.117★ (students in the Faculty of Science);
4. Mathematics 69.102; Fall term: Mathematics 69.117★ (students in the Faculty of Science);
5. Fall term: Mathematics 69.107★, 69.117★; Winter term: Mathematics 69.207★, 69.217★ (students in the Faculties of Arts, Social Sciences or Science);
6. Fall term: Mathematics 69.109★; Winter term: Mathematics 69.119★ (students in the School of Business, Department of Economics or in other Arts or Social Sciences departments).

Note:

Credit will only be given for one of: Mathematics 69.102, 69.104★, 69.107★, 69.109★; and one of: Mathematics 69.112, 69.114★, 69.117★, 69.119★, 69.127★ (no longer offered).

Honours Programs: B.Sc. and B.A.

Honours Core Requirements

Prospective Honours students should note that the courses Mathematics 69.102, 69.112, 70.200 and 70.210 provide more than just the basic mathematical techniques; they also provide training in rigorous mathematical thinking and, as such, are basic to the Honours Mathematics programs.

The core requirements for the Honours programs in Mathematics, Computer Mathematics, and Statistics, are as given below.

In certain cases the Department may permit a student to replace a course at the Fourth-year level by a graduate course.

Each Honours program requires a total of 20.0 credits including:

Mathematics 69.102, 69.112 with an average grade of C+ or better.

Alternatively, students may be admitted to an Honours program in Mathematics after successful completion of First year with:

- (a) a GPA of 7.0 or better on all half credits offered from: Mathematics 69.107★, 69.207★; 69.117★, 69.217★; and
- (b) a weighted GPA of 6.0 or better on all credits offered from: Mathematics 69.102, 69.107★, 69.207★; 69.112, 69.117★, 69.217★.

Notes:

(a) Students offering Mathematics 69.107★ must then take Mathematics 69.207★, and students offering Mathematics 69.117★ must then take Mathematics 69.217★.

(b) Knowledge of a computer language is required for Mathematics 70.260.

Mathematics 70.200, 70.210, 70.260.

Mathematics 70.495★ (Honours Project). The Honours Project in Mathematics consists of a written report on some approved topic or topics in the field of Mathematics together with a short lecture on the report. Each student should commence work on the project under a faculty supervisor before June 1 of the year before he or she intends to graduate (for full-time students, this would be the June 1 between Third and Fourth Year.) The first draft of the report must be submitted to the supervisor by November 1, and the final draft to the Department by January 15. Students who do not meet this latter deadline will be given the grade *FNS*.

For the B.A. program:

2.0 credits at the 200-level or above in the Faculties of Arts or Social Sciences.

For the B.Sc. program:

2.0 Science Continuation credits are required (in addition to the First-year experimental science requirement). Certain Computer Science courses required in specific programs may be counted towards this requirement. However, Computer Science courses that are cross-listed with Mathematics courses are not acceptable as Science Continuation courses. Acceptable courses and exceptions are noted on p. 110.

2.0 Arts or Social Science elective credits. Concerning Social Science electives, see the note on p. 110.

In each program, the remaining courses may be chosen from any department, including Mathematics and Statistics, subject only to the restriction that of the total of 20.0 credits, not more than 7.0 may be below the 200-level.

Course Requirements for Honours Programs:**Mathematics (Honours B.Sc. and B.A.)**

This program requires a minimum of 11.0 credits in Mathematics.

Course requirements for this program are:

1. Honours core requirements (see p. 386);
2. Mathematics 70.301★, 70.307★, 70.310, and at least one of 70.302★ or 70.308★;
3. 1.5 credits in Mathematics (70 series) at the 300-level or above;
4. 1.5 credits in Mathematics (70 series) at the 400-level or above.

Note:

It is strongly recommended that Mathematics 70.301★ be taken in the Third year.

Students wishing to specialize in *Applied Analysis* may, with permission of the Department, replace items 2, 3, and 4 in the Mathematics degree requirements by:

2. Mathematics 70.302★, 70.307★, 70.308★, 70.346★, 70.356★, and 1.0 credit from Mathematics 69.381★, 69.384★, 69.386★, and Honours courses in Mathematics (70 series) at the 300-level or above;
3. Mathematics 70.470★, at least one of 70.471★, 70.472★, and 0.5 additional credit in Mathematics at the 400-level;
4. an additional 0.5 credit, chosen from Computer Science (95 series, 200-level or above) or from Mathematics (70 series, at the 300-level or above).

Students wishing to specialize in *Stochastics* may, with permission of the Department, replace items 2, 3, and 4 in the Mathematics degree requirements by:

2. Mathematics 70.301★, 70.308★, 70.350, 70.356★ and one of 70.355★, 69.381★;
3. Mathematics 70.451★, and 0.5 credit selected from the range 70.450★ to 70.459★;
4. 1.0 credit in Mathematics at the 400-level or above;
5. an additional 0.5 credit chosen from Computer Science (95 series, 200-level or above) or from Mathematics (70 series or 69.384★, 69.386★).

Students specializing in *Applied Analysis* or *Stochastics* are encouraged to include at least 1.5 credits in Computer Science in their program.

Computer Mathematics (Honours B.Sc. and B.A.)

This program requires a minimum of 14.0 credits in Mathematics and Computer Science. Computer Science 95.100★ and 95.101★ are not acceptable in this program, even as free options.

See graduation requirements, p. 385.

Course requirements for this program are:

1. Honours core requirements (see p. 386);
2. Computer Science 95.102★, 95.105★, 95.106★, 95.202★;
3. Mathematics 70.301★, 69.384★;

4. Mathematics 70.310, or Mathematics 70.385★ and 69.381★;

5. 1.0 credit from Mathematics 69.304★, 69.381★, 69.386★ and courses in the range Mathematics 70.302★ and above;

6. Mathematics 70.350, or Mathematics 70.259★ and 70.356★;

7. Mathematics 70.486★, and one of 70.482★ or 70.483★;

8. an additional 0.5 credit from Mathematics 70.481★, 70.482★, 70.483★, 70.485★, 70.488★, or an approved 0.5 credit at the graduate level (70.580 series);

9. 1.0 additional credit in Computer Science at the 200-level or above.

Note:

Only one of Computer Science 95.105★ or 95.103★, 95.107★, 95.140★/42.140★, Engineering 91.166★, or the former Engineering 94.165 can be counted for credit in the Computer Mathematics program; permission from the Department of Mathematics and Statistics is required for such a replacement of 95.105★.

Statistics (Honours B.Sc. and B.A.)

This program requires a minimum of 11.0 credits in Mathematics and Statistics. The program is of particular interest to a student wishing to pursue a career as a professional statistician.

See graduation requirements, p. 385.

Course requirements for this program are:

1. Honours core requirements (see p. 386; Mathematics 70.210 may be deferred until Third year);
2. Mathematics 70.259★;
3. (a) Computer Science 95.107★, 95.108★; or (b) Computer Science 95.105★, 95.106★;
4. Mathematics 70.350, 70.355★, 70.356★, 69.386★, and an additional 0.5 credit in Mathematics (70-series) at the 300-level or above;
5. Mathematics 70.450★, and 1.5 credits from the range Mathematics 70.451★ to 70.459★.

Students considering a career in actuarial science are advised to include Mathematics 69.381★ in their program.

Operations Research (Honours B.Sc. and B.A.)

Operations Research (O.R.) originated just before World War II as a response to the need to implement the newly invented RADAR into an operational tool for the Royal Air Force. An O.R. Section was formed to develop a scientific approach to the analysis of problems such as air-defense and logistics. In anti-submarine warfare, for example, improvements were made to the spacing and settings of depth charges based on scientific measurement and analysis of data.

O.R. is now a common management tool and is a component of the training of many disciplines. It is

also called Management Science or Industrial Management. O.R. is used extensively in business and industry for:

a) scheduling of vehicles, production or personnel

Airlines must satisfy their need for air crews for all routes but want to minimize the staff required. They may also wish to give pilots a choice of routes, based on seniority, and minimize the total number of nights that crews sleep away from home. These problems can be solved by integer programming.

b) network design

Telephone companies need to provide an optimal number of lines and switches to handle peak telecommunication traffic at minimal cost. The problem includes determining the optimal locations for the switching stations and the best topology for the network.

c) determination of optimal mixes

Oil refineries receive oils from different locations, with different chemical composition. Refiners need to find the optimal choice of products such as gasoline, heating oil, diesel fuel, or naphtha to maximize their profits.

There is currently a great deal of theoretical activity in the mathematical side of O.R., especially in the areas of mathematical programming, graph theory, algorithms, complexity, stochastic modelling, economics, and queueing. The Travelling Salesman Problem is an instance of an active area of interest to O.R. researchers.

The program at Carleton University was designed in consultation with employers of O.R. professionals and the Canadian Operations Research Society. Graduates of this program will be prepared for careers either in government or in the private sector, and they will be qualified to continue in graduate programs.

Operations Research at Carleton University is exclusively an Honours program. Students who select a program with an orientation towards Mathematics-Physical Science-Computer Science should proceed towards a B.Sc. (Honours) degree. Those students who prefer a Management-Business-Social Science orientation would normally proceed towards a B.A. (Honours) degree. An Honours project (Mathematics 70.495★) is a required component of either degree program.

Students who are planning to apply for admission to this program should have good quantitative skills. The recommended courses provide a broad range of O.R. techniques and methodologies which include: statistical analysis, stochastic processes, linear and non-linear optimization, network theory, mathematical modelling and computer simulation. It is recommended that students acquire an understanding of the human side of the O.R. discipline through study within the Social Sciences.

Students who are considering this program are urged to meet with the program coordinator to discuss their interests. The committee is available to advise students within the program.

A total of 20.0 credits is required in accordance with the conditions given below. All course selections must be approved by the Department of Mathematics and Statistics.

Students in the B.Sc. program must include a First-year experimental science in their First-year course selection.

1. Mathematics 69.102, 69.112 with an average grade of C+ or better.

Alternatively, students may be admitted to the Honours program in Operations Research after successful completion of First year with:

- (a) a GPA of 7.0 or better on all half credits offered from Mathematics 69.107★, 69.207★, 69.117★, 69.217★; and
- (b) a weighted GPA of 6.0 or better on all credits offered from Mathematics 69.102, 69.107★, 69.207★, 69.112, 69.117★, 69.217★.

Note:

Students offering Mathematics 69.107★ must then take 69.207★, and students offering 69.117★ must then take 69.217★.

2. Mathematics 70.200, 70.260, 70.259★ and 69.317★;

3. Mathematics 69.311★, 69.381★, 69.386★;

4. Mathematics 70.460★, 70.495★; at least 1.0 credit in probability/statistics (70-series) at the 300-level or higher; at least 1.0 additional credit in Mathematics and Statistics at the 400-level or higher;

5. Computer Science 95.105★ and 95.106★; or 95.107★ and 95.108★ (or equivalents); and at least 1.0 credit in Computer Science at the 200-level or higher;

6. 3.5 credits in an approved field of interest, of which at least 1.0 credit is at the 300-level or higher. The choice of field must be made in consultation with and approved by the Program Co-ordinator. Students are required on an annual basis to make a specific plan for completing their requirements, which is to be submitted in advance of registration for the approval of the Operations Research Committee.

7. The remaining credits are free electives.

8. Of the 20.0 credits required, not more than 7.0 may be below the 200-level.

Students in the B.Sc. program must take 2.0 Arts or Social Science elective credits, and should note the statement concerning Social Science Electives, as outlined on p. 110.

Combined Honours Programs: B.Sc. and B.A.

Economics and Mathematics (Honours B.A.)

This program requires a minimum of 7.0 credits in Economics and 9.0 credits in Mathematics. All course selections must be approved by the Department of Mathematics and Statistics and the Department of Economics.

Course requirements for this program are:

1. Mathematics 69.102, 69.112 (or their equivalents), Computer Science 95.107★, 95.108★;
2. Mathematics 70.200, 70.210, 70.260 and 70.259★;
3. Mathematics 70.301★, 70.350, at least one of

70.302★ or 70.308★, and an additional 0.5 credit in Mathematics at the 300- or 400-level;

4. 1.0 additional credit in Mathematics at the 400-level;

5. the Economics requirements as given on p. 241.

Note:

Students in Economics and Mathematics may not take Economics 43.240★ for academic credit (not even as a free option).

Economics and Statistics (Honours B.A.)

This program requires a minimum of 7.5 credits in Economics and 8.5 credits in Mathematics and Statistics.

Course requirements for this program are:

First Year

1. Mathematics 69.102, 69.112;
2. Economics 43.100;
3. Computer Science 95.107★, 95.108★;
4. 1.0 credit option in Arts or Social Sciences.

Second Year

1. Mathematics 70.200, 70.260, 70.259★, and 69.317★;
2. Economics 43.202★, 43.203★, 43.212★, 43.213★.

Third Year

1. Mathematics 70.350, 70.355★, and 0.5 credit from the (Mathematics) list M1;
2. Economics 43.420★, 43.421★, and 1.0 additional credit in Economics at the 400-level;
3. 1.0 credit option.

Note:

Those students wishing to take 43.405★ in Year IV should take 69.381★ in Year III.

Fourth Year

1. Mathematics 70.452★, 70.453★, and 0.5 credit from the (Mathematics) lists M1 and M2;
2. Economics 43.490, 43.477★, and 1.0 additional credit in Economics at the 400-level;
3. 1.0 credit option.

list M1

69.381★, 69.386★, 70.301★, 70.356★, 70.385★

list M2

70.450★, 70.451★, 70.456★ through 70.459★, 70.495★

Note:

(a) Recommended 400-level courses in Economics are 43.405★, 43.406★, 43.407★, 43.439★, 43.483★, 43.484★.

(b) The following courses **may not be counted for academic credit in this program** (even as free options):

Economics 43.220, 43.240★, 43.404★, Political Science 47.270, 47.471★, 47.472★, Psychology

49.200, 49.300, Sociology/Anthropology 53.203, 54.203.

Mathematics and Philosophy (Honours B.A.)

This program requires a minimum of 7.0 credits in Philosophy and 9.0 credits in Mathematics. All course selections must be approved by the Department of Mathematics and Statistics and the Department of Philosophy.

Course requirements for this program are:

1. Mathematics 69.102, 69.112 (or their equivalents);
2. Mathematics 70.200, 70.210, 70.260, 70.301★, 70.310, and at least one of 70.302★ or 70.308★;
3. 1.0 additional credit in Mathematics at the 300 or 400-level;
4. 1.0 additional credit in Mathematics at the 400-level.
5. For the requirements in Philosophy, consult the Honours supervisor in the Department of Philosophy.

Other Combined Programs (Honours B.A.)

Other Combined Honours programs such as German and Mathematics, Geography and Mathematics are available. Please consult the Department of Mathematics and Statistics for full details.

Computer Science and Mathematics (Honours B.Sc.)

This program is administered by the Committee on Combined Programs with Computer Science (CCPCS); the Committee consists of representatives from the School of Computer Science, the Department of Physics, and the Department of Mathematics and Statistics.

Enrolment in this program is limited. Applicants should note that meeting the minimum published requirements for admission to this program does not imply automatic acceptance.

Applications for admission to this program will only be processed by the Committee during the periods mid-May to mid-June, and mid-August to mid-September each year.

Continuation in the Program:

To continue in the program, a student must:

- (a) by the end of August each year, have gained at least 0.5 credit in the past 12 months towards the degree requirements, and
- (b) have accumulated a GPA of 6.5 or better in each of Computer Science and Mathematics, and a GPA of 5.0 or better overall. (GPAs are to include any failing grades that have not yet been replaced by a passing grade in the same or a substitute course.)

Failure to comply with these standards requires withdrawal from the program.

This program requires a minimum of 15.0 credits in Computer Science and Mathematics, placing equal emphasis on both these disciplines. Students may choose one of two options which serve as areas of concentration. All course selections must be approved both by the Department of Mathematics and Statistics and the School of Computer Science. A

total of 20.0 credits is required in accordance with the conditions given below.

Note:

Some courses offered by the School of Business and the Department of Systems and Computer Engineering may be taken for credit as Computer Science courses in this program. For a complete list of these courses see p. 227.

Core Requirements (10.0 credits in Mathematics and Computer Science):

1. Mathematics 69.102, 69.117★; Computer Science 95.102★, 95.105★, 95.106★;

Note:

Students who wish to keep open the choice of other Honours programs in Mathematics and Statistics are advised to take Mathematics 69.112 instead of 69.117★ (and 69.217★).

2. Mathematics 70.200, 69.217★; Computer Science 95.202★, 95.203★, 95.204★ and 95.304★;

3. Mathematics 70.210; Computer Science 95.300★, 95.305★, 95.384★, 95.385★; Mathematics 70.495★ or Computer Science 95.495★.

4. 1.0 First-year Experimental Science credit. 2.0 credits in Arts or Social Sciences. Concerning Social Science electives, see the note on p. 110.

5. 2.0 free option credits, subject only to the requirement that of the total of 20.0 credits, not more than 7.0 may be below the 200-level.

Candidates must also satisfy the requirements of one of the following two options: (Each option contains 5.0 credits in Computer Science and Mathematics.)

Option: Computing Theory and Numerical Methods (CTNM)

1. Mathematics 70.260;
2. Mathematics 69.381★, 69.386★ and one of Mathematics 70.301★, 70.302★, 70.307★, 70.308★;
3. Computer Science 95.484★, and 1.0 credit from Mathematics 70.481★, 70.482★, 70.483★, 70.485★, 70.486★, 70.488★;
4. 1.0 additional credit in Computer Science at the 300-level or above.

Option: Statistics and Computing (STC)

1. Mathematics 70.259★, 70.260;
2. Mathematics 70.350, and at least one of 70.355★, 70.356★;
3. 1.0 credit in Mathematics from the range Mathematics 70.450★ to 70.459★;
4. 1.0 credit in Computer Science at the 400-level.

Geology and Statistics (Honours B.Sc.)

This program requires a total of 20.0 credits including 15.0 credits in geology and mathematics.

Course requirements for this program are:

First Year

1. Mathematics 69.102, 69.117★;

2. Geology 67.100;

3. Chemistry 65.100, and 1.0 credit from Biology 61.103★ and 61.104★, or Physics 75.101★ and 75.102★ (or 75.105);

4. Computer Science 95.104★ (or 95.107★).

Second Year

1. Mathematics 69.208★, 69.217★, 69.257★, 69.259★;

2. Geology 67.221★, 67.223★, 67.228★, 67.232★, 67.281★;

3. 0.5 credit free option (or Computer Science 95.108★, if 95.107★ was taken in First year).

Third and Fourth Years

1. Mathematics 69.244★, 69.350, 70.355★, 70.452★, 70.453★, and 0.5 credit from: 69.304★, 69.381★, 69.386★;

2. two of the following three blocks:

- (a) Geology 67.323★, 67.324★

- (b) Geology 67.385★, 67.386★

- (c) Geology 67.231★ and either 67.321★ or 67.332★;

3. 1.5 credits in Geology at the 400-level;

4. Geology 67.498; or Mathematics 70.495★ and an additional 0.5 credit in Mathematics or Statistics at the 300-level or above;

5. 2.0 Arts or Social Science elective credits.

Mathematics and Physics (Double Honours B.Sc.)

This program requires a minimum of 21.5 credits including 18.5 credits in Mathematics and Physics. Entrance after First year and continuation in the program at the end of First year requires: successful completion of First year with a GPA of 9.0 or better over the courses Mathematics 69.102 and 69.112 (or their equivalents), and a GPA of 9.0 or better over the courses Physics 75.101★ and 75.102★; or permission of both Departments.

Course requirements for this program are:

First Year

1. Mathematics 69.102, 69.112 (or their equivalents);

2. Physics 75.101★ and 75.102★;

3. Chemistry 65.100, or Biology 61.103★ and 61.104★;

4. 1.0 Arts or Social Science elective credit.

Note:

It is highly recommended that Computer Science 95.103★ be taken in the First year in addition to the foregoing courses. When this course is taken for credit, it will be included in the calculation of the overall GPA.

Second Year

1. Mathematics 70.200, 70.210, 70.260;

2. Physics 75.211★, 75.222★, 75.235★, 75.262★;

3. an elective 0.5 credit in Arts or Social Sciences.

Third Year

1. Mathematics 70.301★, 70.302★, 70.310;
2. Physics 75.307★, 75.338★, 75.342★, 75.371★, 75.381★;
3. an additional 0.5 credit in Mathematics or Physics at the 300-level;
4. either Mathematics 70.307★ and Physics 75.388★, or Physics 75.387★ and 75.388★.

Fourth Year

1. 1.0 credit in Mathematics at the 400-level;
2. Physics 75.437★, 75.447★, 75.477★, 75.478★;
3. 1.0 additional credit in Mathematics or Physics at the 300- or 400-level;
4. either Mathematics 70.495★ or one of Physics 75.497★, 75.498★;
5. an elective 0.5 credit in Arts or Social Sciences.

B.Sc. (Major) and B.A. (Pass) Programs**Core Requirements**

The requirements given below are common to all Major/Pass programs in the Department of Mathematics and Statistics.

In certain cases the Department may permit a student to replace courses listed in the 69 series by the corresponding Honours (70 series) courses.

Each Major/Pass program requires a total of 15.0 credits, including:

Mathematics 69.102, 69.112 with an average grade of C- or better.

Alternatively, students may be admitted to a Major/Pass program in Mathematics after successful completion of First year with:

- (a) a minimum GPA of 5.0 on all half credits offered from: Mathematics 69.107★, 69.207★; 69.117★, 69.217★; and
- (b) a minimum weighted GPA of 4.0 on all courses offered from: Mathematics 69.102, 69.107★, 69.207★; 69.112, 69.117★, 69.217★.

Note:

Students offering Mathematics 69.107★ must then take Mathematics 69.207★, and students offering Mathematics 69.117★ must then take Mathematics 69.217★.

For the B.A. Program:

2.0 credits at the 200-level or above in the Faculties of Arts or Social Sciences.

For the B.Sc. Program:

2.0 Science Continuation credits are required (in addition to the First-year experimental science requirement). Certain Computer Science courses required in specific programs may be counted towards this requirement. However, Computer Science courses that are cross-listed with Mathematics courses are not acceptable as Science Continuation courses. Acceptable courses and exceptions are noted on p. 110.

2.0 Arts or Social Science elective credits. Concerning Social Science electives, see the note on p. 110.

In each program, the remaining courses may be chosen from any department, including Mathematics and Statistics, subject only to the restriction that of the total of 15.0 credits not more than 7.0 may be below the 200-level.

Course requirements for Major/Pass programs:**Mathematics (B.Sc. (Major) and B.A. (Pass))**

This program requires a minimum of 7.0 credits in mathematics.

Course requirements for this program are:

1. core requirements (see p. 391);
2. Mathematics 69.208★, 69.218★, 69.244★, 69.257★;
3. 3.0 credits in Mathematics selected from the range 69.304★ to 69.389★, excluding 69.311★, 69.352★, 69.375★ and 69.376★.

With permission of the Department, one or more of the courses in requirement 3 may be replaced by a course in the 70 series at the 300- or 400-level, provided that of the total of 3.0 credits, not more than 2.0 are in the same area.

Note:

Students wishing to specialize in *Applied Analysis* may, with the permission of the Department, replace requirements 2 and 3 in the Mathematics degree requirements by:

2. Mathematics 69.208★, 69.244★, 69.257★;
3. Mathematics 69.304★, 69.307★, and one of Mathematics 69.344★, 69.381★, 69.386★, or Physics 75.381★;
4. 1.0 additional credit in Mathematics at the 300-level, excluding 69.311★ and 69.352★;
5. 1.0 additional credit at the 200- or 300-level chosen from Mathematics or Computer Science.

Students specializing in *Applied Analysis* are encouraged to include at least 1.5 credits in Computer Science in their program.

Computer Mathematics (B.Sc. (Major) and B.A. (Pass))

This program requires a minimum of 10.0 credits in Mathematics and Computer Science. Computer Science 95.100★ and 95.101★ are not acceptable in this program, even as free options.

See graduation requirements, p. 385.

Course requirements for this program are:

1. core requirements (see p. 391);
2. Computer Science 95.102★, 95.105★, 95.106★, 95.202★;
3. Mathematics 69.208★, 69.218★, 69.257★;
4. Mathematics 69.384★, 70.385★, and at least one of Mathematics 69.381★, 69.386★;
5. 1.0 additional credit in Mathematics at the 300-level, excluding 69.311★ and 69.352★;

6. 1.0 additional credit in Computer Science (95 series) at the 200-level or above;

7. 1.0 additional credit at the 200- or 300-level in Mathematics or Computer Science.

Note:

Only one of Computer Science 95.105★ or 95.103★, 95.107★, 95.140★/42.140★, Engineering 91.166★, or the former Engineering 94.165 can be counted for credit in the Computer Mathematics program; permission from the Department of Mathematics and Statistics is required for such a replacement of 95.105★.

Statistics (B.Sc. (Major) B.A. (Pass))

This program requires a minimum of 6.0 credits in Mathematics and Statistics.

See graduation requirements, p. 385.

Course requirements for this program are:

1. core requirements (see p. 391);
2. Mathematics 69.208★, 69.257★, 69.259★;
3. Mathematics 69.350, 69.353★, 69.354★, 69.357★;
4. 1.0 additional credit at the 200-level or above chosen in a relevant topic from courses offered by the Faculty of Science, the School of Computer Science or the Faculty of Social Sciences. This credit is in addition to the Science Continuation credits required in the B.Sc. program and the Arts and Social Science credits (200-level or above) required in the B.A. program.

Students majoring in Statistics are urged to include at least 1.0 credit in Computer Science in their program. Students are advised to consult the School of Computer Science regarding the most appropriate courses.

Students considering a career in actuarial science are advised to include Mathematics 69.381★ and 69.386★ in their program.

Combined Pass Programs: B.A.

Programs are arranged in consultation with the Department of Mathematics and Statistics and another department in the Faculties of Arts or Social Sciences.

In the Core Requirements, the item "2.0 credits at the 200-level or above in the Faculties of Arts or Social Sciences" is not required; this condition is automatically satisfied by the program requirements of the other department.

Combined Pass Program with Mathematics

In general, the Mathematics requirements are the same as those listed under the Mathematics B.A. program (see p. 391), except that only 2.0 credits are required instead of 3.0 under requirement 3.

Combined Pass Program with Statistics

See graduation requirements, p. 385.

In general, the Statistics requirements are the same

as those listed under the Statistics B.A. program (see p. 392), except that:

- (i) under requirement 3, Mathematics 69.350 and 69.353★ are required as well as one of Mathematics 69.354★ and 69.357★;
- (ii) under requirement 4, only 0.5 credit is required.

Combined B.A./M.Sc. and Combined B.Sc./M.Sc. in Mathematics, or in Statistics

This program is designed as a "fast-track" to enable exceptional students to graduate in four years, either with both a B.A. and an M.Sc. degree, or with both a B.Sc. and an M.Sc. degree. It requires a minimum of 9.5 credits in Mathematics and Statistics, and either 5.5 other credits towards a B.A.(Pass) degree, or 6.0 other credits towards a B.Sc.(Major) degree; and then, either 2.5 credits in graduate studies and a thesis, or 4.0 credits in graduate studies and Mathematics 70.495★ (Honours Project), for the M.Sc. degree.

Entry and continuation in the undergraduate portion of this program as well as entry to the graduate portion require minimum GPAs of 11.0 in Mathematics and Statistics, and 10.0 overall.

Mathematics courses required for this program are:

A. for the B.A./M.Sc. or the B.Sc./M.Sc. (Mathematics):

First Year

1. Mathematics 69.102, 69.112.

Second Year

2. Mathematics 70.200, 70.210, 70.260, and 0.5 credit (70-series) at the 300-level or above.

Third Year

3. Mathematics 70.301★, 70.307★, 70.310, and at least one of 70.302★ or 70.308★; in addition, 1.5 credits at the 400-level or above in Mathematics and Statistics.

Fourth Year

4. (registration as a graduate student) Mathematics 70.495★ and 4.0 credits in Mathematics and Statistics at the graduate level (1.0 credit of these may be in another department; OR: an M.Sc. thesis and 2.5 credits in Mathematics and Statistics at the graduate level (1.0 credit of these may be in another department);

Please refer to the Graduate Calendar for specific graduate requirements.

Students wishing to specialize in **Stochastics** may, with the permission of the Department, replace the Second Year requirement of 0.5 credit at the 300-level or above by Mathematics 70.259★, and replace item 3 above by: Mathematics 70.301★, 70.350, 70.356★, and one of 70.302★, 70.307★, 70.308★; and at least 1.5 credits at the 400-level or above in Mathematics and Statistics.

B. for the B.A./M.Sc. or B.Sc./M.Sc. (Statistics):*First Year*

1. Mathematics 69.102, 69.112.

Second Year

2. Mathematics 70.200, 70.210, 70.260, and 70.259★.

Third Year

3. Mathematics 70.301★, 70.350, 70.355★, 70.356★, and at least 1.5 credits at the 400-level or above in Mathematics and Statistics.

Fourth Year

4. (registration as a graduate student) Mathematics 70.495★ and 4.0 credits in Mathematics and Statistics at the graduate level (1.0 credit of these may be in another department); OR: an M.Sc. thesis and 2.5 credits in Mathematics and Statistics at the graduate level (1.0 credit of these may be in another department).

Please refer to the Graduate Calendar for specific graduate requirements.

Before entry into the Fourth year of this program, students must: obtain a recommendation from the Department of Mathematics and Statistics to continue, apply to transfer either to the B.A.(Pass) program and apply to graduate with a B.A.(Pass) degree, or apply to transfer to the B.Sc.(Major) program and apply to graduate with a B.Sc.(Major) degree, by the end of January of their Third year, and submit an application for graduate studies to the Department by mid-February.

Graduate Programs: M.Sc. and Ph.D.

For requirements for graduate degrees, see the *Calendar for the Faculty of Graduate Studies and Research*.

Course Numbering

Course numbers prefixed by 70 indicate courses intended primarily for Honours students; all other courses have numbers prefixed by 69. Credit will not be given for two courses having the same number but different prefixes.

Supplemental Examinations Note

In the following half-credits in Mathematics and Statistics, where the course is offered in two successive terms, the Supplemental/Grade-Raising/Deferred Final Examination for the first course will be taken as the second course final examination, except where such a delay might delay graduation in the Fall:

Mathematics 69.007★, 69.017★, 69.107★, 69.109★, 69.117★, 69.119★, 69.207★, 69.208★, 69.217★, 69.257★, 69.259★.

Prerequisites for First-Year Calculus and Algebra Courses**1. Pre-University Calculus:**

An OAC in Calculus, or Mathematics 69.007★, or equivalent.

Students lacking an OAC in Calculus (or equivalent) must successfully complete Mathematics 69.007★ prior to taking a 100-level Calculus course. For students in any program offered by the Department of Mathematics and Statistics, the above requirement of Mathematics 69.007★ is in addition to the minimum 15.0 credits in Pass or Major programs, or 20.0 credits in Honours programs.

2. Pre-University Algebra:

An OAC in Algebra and Geometry, or Mathematics 69.017★, or equivalent.

Note:

An OAC in Finite Mathematics is not an equivalent.

Students lacking an OAC in Algebra and Geometry (or equivalent) must successfully complete Mathematics 69.017★ prior to taking a 100-level Algebra course.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Note:

Students who have completed Ontario Grade 12 Mathematics, but who have been away from mathematics for several years, or who feel that their mathematics background is weak, should consider taking the course "Refresher Workshop in Mathematics." The Refresher Workshop is offered by The Carleton Professional Development Centre as the non-credit course ADM 658, and is highly recommended for remedial purposes.

Mathematics 69.007★**Introductory Calculus**

Limits and continuity. Differentiation. Trigonometric, logarithmic, and exponential functions and their derivatives; curve sketching; applied problems in maxima and minima, and related rates.

Not available for degree credit for students who have successfully completed an OAC in Calculus/or an equivalent High School Calculus course.

Prerequisites: additional credit for Business 42.173.

Prerequisite: Grade 12 Mathematics (Advanced/Academic Level) or Mathematics 69.006★ or equivalent. It is strongly recommended that Mathematics 69.017★ or the equivalent be taken before 69.007★. See *Supplemental Examinations Note*, this page. Lectures three hours a week and one hour tutorial.

Mathematics 69.017★**Algebra and Geometry**

Vectors in the plane and in 3-space. Linear combinations and linear independence. Equations of lines and

planes in space. Solution of systems of linear equations. Complex numbers (including de Moivre's Theorem, and n -th roots). Proofs by induction. Not available for degree credit for students who have successfully completed an OAC in Algebra and Geometry/or an equivalent High School Algebra course. Prerequisite: Grade 12 Mathematics (Advanced/Academic Level) or Mathematics 69.006★ or equivalent. See *Supplemental Examinations Note*, p. 393. Lectures three hours a week and one hour tutorial.

Mathematics 69.102

Calculus

This course is strongly recommended for students intending to specialize in mathematics, statistics, physics, or related areas. Limits, differentiation, the definite integral, elementary functions, techniques of integration, parametric equations and polar coordinates. Improper integrals, L'Hôpital's rules, sequences and series, Taylor's formulae, introduction to differential equations.

Precludes additional credit for Mathematics 69.104★, 69.107★, 69.109★, 69.201, 69.202, 69.207★.

Prerequisites: (i) a pre-university calculus course with a grade of 65 percent or better; and (ii) an OAC in Algebra and Geometry, or Mathematics 69.017★, or permission of the Department. (See *Prerequisites for First-year Calculus and Algebra Courses*, p. 393.) Lectures three hours a week and one hour tutorial.

Note:

Although the main prerequisite for Mathematics 69.102 is a grade of 65 percent or better in a pre-university calculus course, past experience indicates that students with less than 75 percent in their prerequisite calculus have only a small chance of success in Mathematics 69.102.

Mathematics 69.104★

Calculus for Engineering Students

The definite and indefinite integral; numerical approximation. Special functions (trigonometric and inverse trigonometric, logarithm and exponential), their derivatives and integrals. Applications: area, volume, average value. Further techniques of integration: integration by parts, partial fractions, and substitutions. Introduction to differential equations.

Restricted to students in the Faculty of Engineering. Precludes additional credit for Mathematics 69.102, 69.107★, 69.109★.

Prerequisite: a pre-university calculus course. (See *Prerequisites for First-year Calculus and Algebra Courses*, p.393.)

Lectures three hours a week and one hour tutorial.

Mathematics 69.107★

Elementary Calculus I

Definite and indefinite integrals, differentiation and integration of the elementary functions, techniques and applications of integration.

Precludes additional credit for Mathematics 69.102, 69.104★, 69.109★.

Prerequisite: a pre-university calculus course. (See *Prerequisites for First-year Calculus and Algebra Courses*, p. 393.)

See *Supplemental Examinations Note*, p. 393.

Lectures three hours a week and one hour tutorial.

Notes:

1. Students with less than 60 percent in their pre-university calculus course are advised that past experience indicates their chance of success in Mathematics 69.107★ is small.

2. A grade of C- or better in Mathematics 69.107★ is a prerequisite for certain 200-level Mathematics courses.

Mathematics 69.109★

Calculus: with Applications to Business and Economics

Definite and indefinite integrals; integration of the elementary functions; some techniques of integration. Functions of several variables; partial differentiation; constrained optimization. Selected applications in business and economics.

Precludes additional credit for Mathematics 69.102, 69.104★, and 69.107★.

Prerequisite: a pre-university calculus course. (See *Prerequisites for First-year Calculus and Algebra Courses*, p. 393.)

See *Supplemental Examinations Note*, p. 393.

Lectures three hours a week and one hour tutorial.

Note:

Students with less than 60 percent in their pre-university calculus course are advised that past experience indicates their chance of success in Mathematics 69.109★ is small.

Mathematics 69.112

Algebra

This course is strongly recommended for students intending to specialize in mathematics, statistics, physics, or related areas. Fields, complex numbers, vector algebra and geometry in 2 and 3 dimensions, matrix algebra, linear dependence, bases, linear transformations, bilinear and quadratic forms, inner products, eigenvalues, principal axis theorem.

Precludes additional credit for Mathematics 69.114★, 69.117★, 69.119★, 69.217★.

Prerequisites: (i) a pre-university algebra course with a grade of 65 percent or better, and (ii) an OAC in Calculus, or Mathematics 69.007★, or permission of the Department. (See *Prerequisites for First-year Calculus and Algebra Courses*, p. 393.)

Lectures three hours a week and one hour tutorial.

Note:

Although the main prerequisite for Mathematics 69.112 is a grade of 65 percent or better in a pre-university algebra course, past experience indicates that students with less than 75 percent in their prerequisite mathematics have only a small chance of success in Mathematics 69.112.

Mathematics 69.114★

Linear Algebra for Engineering and Computer Science Students

Systems of linear equations. Matrix algebra. Determinants. Complex numbers. Eigenvalues. Diagonalization and applications.

Restricted to students in the Faculty of Engineering or in the School of Computer Science.

Precludes additional credit for Mathematics 69.112, 69.117★, 69.119★.

Prerequisite: a pre-university algebra course. (See *Prerequisites for First-year Calculus and Algebra*

Courses, p. 393.)

Lectures three hours a week and one hour tutorial.

Mathematics 69.117★

Linear Algebra I

Systems of linear equations; vector space of n -tuples, subspaces and bases; matrix transformations, kernel, range; matrix algebra and determinants. Inner products and orthogonality. Eigenvalues, diagonalization and applications. Emphasis throughout this course will be on the computational aspects (and not on theoretical aspects).

Precludes additional credit for Mathematics 69.112, 69.114★, 69.119★.

Prerequisite: a pre-university algebra course. (See *Prerequisites for First-year Calculus and Algebra Courses*, p. 393.)

See *Supplemental Examinations Note*, p. 393.

Lectures three hours a week and one hour tutorial.

Note:

A grade of C- or better in Mathematics 69.117★ is a prerequisite for certain 200-level Mathematics courses.

Mathematics 69.119★

Linear Algebra: With Applications to Business and Economics

Algebraic concepts, systems of linear equations, vector algebra; matrix algebra, rank, inversion, determinants; linear programming — geometric approach, simplex method, etc. Applications in the fields of business and economics.

Precludes additional credit for Mathematics 69.112, 69.114★, 69.117★; and for Mathematics 69.132★ (Architecture 79.201★), (no longer offered).

Prerequisite: a pre-university algebra course. (See *Prerequisites for First-year Calculus and Algebra Courses*, p. 393.)

See *Supplemental Examinations Note*, p. 393.

Lectures three hours a week and one hour tutorial.

Mathematics 69.185★

Introduction to Discrete Structures

An introduction to the discrete mathematics and discrete structures of computer science, providing an overview of the major strands in theoretical computer science. The following topics are introduced: propositional and predicate calculus, combinatorial counting and recurrence relations, graphs, and formal language theory, automata theory, computability. (Also listed as Computer Science 95.185★.)

This course is available to Science students only as a free option.

Prerequisites: Two OACs in Mathematics, and one of Computer Science 95.105★ or 95.103★ or 95.107★ (which may be taken concurrently).

Lectures three hours a week.

Mathematics 69.201

Intermediate Calculus

Differential calculus of functions of several variables, multiple integration, elements of infinite series, complex numbers, differential equations.

Restricted to students in Engineering or Physics.

Precludes additional credit for Mathematics 69.102, 69.202, 69.207★, 69.208★, 69.244★, 70.200, 70.260.

Prerequisites: Mathematics 69.104★ and 69.114★

(or Mathematics 69.107★ with a grade of C- or better, and credit in Mathematics 69.117★).

Lectures three hours a week and one hour tutorial.

Mathematics 69.202

Intermediate Mathematics

Partial differentiation, infinite series, multiple integration, differential equations, Fourier series, introduction to matrix and eigenvalue problems. Intended for Science students.

Precludes additional credit for Mathematics 69.102, 69.201, 69.207★, 69.208★, 69.244★, 70.200, 70.260.

Prerequisites: Mathematics 69.107★ with a grade of C- or better, and credit in Mathematics 69.117★.

Lectures three hours a week and one hour tutorial.

Mathematics 69.207★

Elementary Calculus II

Further techniques of integration, improper integrals, polar coordinates, parametric equations, indeterminate forms, sequences and series, Taylor's formula and series, first order and linear differential equations.

Precludes additional credit for Mathematics 69.102, 69.201, 69.202.

Prerequisites: (i) Mathematics 69.104★, or a grade of C- or better in Mathematics 69.107★ or 69.109★; and (ii) an OAC in Algebra and Geometry, or Mathematics 69.017★, or permission of the Department. See *Supplemental Examinations Note*, p. 393.

Lectures three hours a week and one hour tutorial.

Mathematics 69.208★

Intermediate Calculus

Partial differentiation, chain rule, gradient, line and multiple integrals with applications, transformations, implicit and inverse function theorems.

Precludes additional credit for Mathematics 69.201, 69.202, 70.200.

Prerequisites: Mathematics 69.102 or 69.207★, and 69.112 or 69.117★.

See *Supplemental Examinations Note*, p. 393.

Lectures three hours a week and one hour tutorial.

Mathematics 69.217★

Linear Algebra II

Finite-dimensional vector spaces (over $\mathbb{R}$ and $\mathbb{C}$), subspaces, linear independence and bases. Linear transformations and matrices. Inner product spaces (over $\mathbb{R}$ and $\mathbb{C}$); Orthonormal bases. Eigenvalues and diagonalization. Bilinear and quadratic forms; principal axis theorem.

Precludes additional credit for Mathematics 69.112.

Prerequisites: (i) Mathematics 69.114★, or a grade of C- or better in Mathematics 69.117★ or 69.119★; and (ii) a grade of C- or better in Mathematics 69.107★ or equivalent; or permission of the Department.

See *Supplemental Examinations Note*, p. 393.

Lectures three hours a week and one hour tutorial.

Mathematics 69.218★

Introductory Abstract Algebra

Sets and relations, number theory, group theory, ring theory, cardinal numbers.

Precludes additional credit for Mathematics 69.311★ and 70.210.

Prerequisite: Mathematics 69.112 or 69.217★.
Lectures three hours a week and one hour tutorial.

Mathematics 69.241★

Mathematical Methods for Scientists

Complex numbers; phasors. Invariance principles: symmetries, transformations under translations, rotations and reflections; elements of group theory and simple applications. Elements of probability theory and statistics and applications to the analysis of experimental data. Fourier series and Fourier coefficients. Elementary partial differential equations of interest in science and their solutions. This course emphasizes techniques applicable to the physical sciences, such as quantum mechanics and electromagnetism. For students in programs offered by the Department of Mathematics and Statistics, this course is not available for credit.

Prerequisites: (i) Mathematics 69.102 (or 69.207★), 69.112 (or 69.217★); and 69.208★ (previously or concurrently); and (ii) Physics 75.101★ and 75.102★ (or a grade of B- or better in Physics 75.105).

Lectures three hours a week and one hour tutorial.

Mathematics 69.244★

Ordinary Differential Equations I

Ordinary differential equations and their applications. Techniques of solving special types of first-order equations. Special solvable equations of second order. Linear equations of order n . Homogeneous and non-homogeneous linear equations with constant coefficients; variation of parameters; simple harmonic motion. Linear ordinary differential equations with variable coefficients of special types (e.g. Euler-Cauchy, Legendre). Series solutions of ordinary differential equations of second order about ordinary points.

Precludes additional credit for Mathematics 69.201, 69.202, 70.260 and for Mathematics 69.245★ (no longer offered).

Prerequisites: Mathematics 69.102 and 69.112 (or 69.117★ and 69.207★).

Lectures three hours a week and one hour tutorial.

Mathematics 69.250

Introduction to Statistical Analysis

Frequency distributions; moments; measures of central tendency, dispersion, skewness; probability; distributions (binomial, Poisson, normal, z , t , F , X^2); statistical inference, confidence intervals; experimental designs (randomized block, Latin square); enumeration statistics; least squares analysis; introduction to correlation and regression analysis; non-parametric tests. Intended for non-Mathematics students.

Precludes additional credit for Mathematics 69.257★, 69.259★, 69.266★, 69.267★, 69.352★, Economics 43.220, Psychology 49.200.

Prerequisite: Mathematics 69.007★.

Mathematics 69.257★

Introduction to Statistics

Data analysis; introduction to probability theory; some standard discrete and continuous distributions such as the binomial, Poisson, hypergeometric, normal, t , and chi-square; their application to interval estimation and significance testing; simple linear re-

gression and correlation, contingency tables; testing for goodness-of-fit. Computational aspects of statistics.

Not acceptable for Engineering students.

Precludes additional credit for Mathematics 69.250, 69.266★, 69.352★, 70.259★, and Economics 43.220.

Prerequisite: Mathematics 69.107★ or equivalent (may be taken concurrently) or permission of the Department.

See *Supplemental Examinations Note*, p. 393.

Lectures three hours a week and one hour laboratory.

Note:

See *Note*, p. 385, under Graduation Regulations, regarding Economics 43.220.

Mathematics 69.259★

Computational Statistics

Exploratory data analysis, non-parametric methods, linear regression and correlation, basic experimental designs, related topics. Computer packages are used for statistical analyses.

Precludes additional credit for Mathematics 69.250, 69.267★, 70.259★, Economics 43.220.

Prerequisites: (i) Mathematics 69.257★ and (ii) an OAC in Algebra and Geometry, or Mathematics 69.017★; or equivalents; or permission of the Department.

See *Supplemental Examinations Note*, p. 393.

Lectures three hours a week and one hour laboratory.

Note:

See *Note*, p. 385, under Graduation Regulations, regarding Economics 43.220.

Mathematics 69.265★

Probability Models

Introductory probability theory including conditional probability, independence, discrete and continuous random variables, Shannon information and coding. Introduction to stochastic modelling, Markov chains and queueing theory. Random number generators and Monte Carlo computer simulation. Statistical methods of fitting and evaluating models; estimation and goodness-of-fit tests. The basic ideas and methods are illustrated with applications to computer system performance evaluation, analysis of algorithms, reliability, search and decision problems.

Restricted to students in the Bachelor of Computer Science program.

Precludes additional credit for Mathematics 69.352★ and 70.260.

Prerequisites: Mathematics 69.207★ (or 69.102) and 69.114★ (or 69.117★).

Lectures three hours a week and one hour tutorial.

Mathematics 69.266★

Business Statistics I

Descriptive statistics; probability concepts; discrete and continuous random variables; normal, t , chi-square and F distributions; interval estimation; testing hypotheses; enumeration statistics; introduction to statistical packages. Emphasis is placed on developing an ability to interpret the results of statistical analyses with applications drawn from the business world.

Restricted to students in the School of Business.

Precludes additional credit for Mathematics 69.250,

69.257★, 69.352★, 70.259★ and Economics 43.220.

Prerequisites: (i) Mathematics 69.109★ with a grade of C- or better; and (ii) an OAC in Algebra and Geometry, or Mathematics 69.017★; or equivalents. Lectures three hours a week and one hour laboratory.

Mathematics 69.267★

Business Statistics II

Topics in simple and multiple linear regression analysis; simple, multiple and partial correlation; one- and two-way analyses of variance; covariance analysis; simple random, stratified, cluster, systematic, two-stage sampling from a finite population; non-parametric tests. SPSS (or an equivalent computer package) is used to illustrate the computational and interpretational aspects of the course.

Restricted to students in the School of Business.

Precludes additional credit for Mathematics 69.250, 69.259★, 70.259★ and Economics 43.220.

Prerequisite: Mathematics 69.266★.

Lectures three hours a week and one hour laboratory.

Mathematics 69.304★

Boundary Value Problems

Laplace transforms. Differential equations; solution in series; the formulation of boundary value problems in mechanics, heat conduction, etc.; the method of separation of variables; eigenfunctions and eigenvalues; Fourier series; Bessel and Legendre functions and applications.

This course may be taken for credit as a 300-level Honours Mathematics course, by students in any Honours program in the Department of Mathematics and Statistics.

Precludes additional credit for Mathematics 69.375★, Physics 75.388★; and for Physics 75.386 (no longer offered).

Prerequisites: Mathematics 69.201; or 69.202; or 69.208★ and 69.244★, or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 69.307★

Functions of a Complex Variable

Analytic functions, contour integration, residue calculus, conformal mapping. Intended for non-engineering students.

Precludes additional credit for Mathematics 69.376★, 70.307★, Physics 75.387★; and for Physics 75.386 (no longer offered).

Prerequisite: Mathematics 69.201, 69.202 or 69.208★.

Lectures three hours a week and one hour tutorial.

Mathematics 69.309★

Introductory Analysis

The real number system, sequences and series, functions of a single real variable, derivatives, the definite integral, uniform convergence.

Precludes additional credit for Mathematics 70.200.

Prerequisite: Mathematics 69.201, 69.202 or 69.208★.

Lectures three hours a week and one hour tutorial.

Mathematics 69.311★

Algebraic Structures with Computer Applications

Introduction to algebraic structures: groups, rings,

fields, lattices, and Boolean algebras; with applications of interest to students in Computer Science. This course is intended primarily for students in the Computer Science programs.

This course may not be used to meet the 300-level course requirements in any Major or Honours program in Mathematics and Statistics.

Precludes additional credit for Mathematics 69.218★ and 70.210.

Prerequisite: Mathematics 69.217★, or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 69.317★

Linear Algebra III

Similarity and unitary triangularization of matrices. Direct methods of solving a system of linear equations. Iterative techniques. Bounds for eigenvalues. Power method and deflation techniques of approximation. The emphasis of the course is primarily on computational aspects.

Prerequisites: (i) a grade of C- or better in Mathematics 69.112 or 69.217★; and (ii) credit in Mathematics 69.102 or 69.207★; or permission of the Department. Lectures three hours a week and one hour tutorial.

Mathematics 69.318★

Abstract Algebra II

Groups and rings. Permutations. Finite symmetry groups. Polynomials, unique factorization domains. Quotient rings, ideals. Field extensions, finite fields. Polynomial equations. Geometric constructions - three famous problems: duplication of the cube; trisection of an arbitrary angle; quadrature of the circle. Precludes additional credit for Mathematics 70.310. Prerequisite: Mathematics 69.218★, or permission of the Department.

Lecture three hours a week and one hour tutorial.

Mathematics 69.325★

Euclidean Geometry and its Groups

Transformations of the Euclidean plane (isometries, similarities); solutions of geometric problems using these transformations; groups of symmetries of finite plane figures, frieze patterns, and regular polyhedra; inversion and the extension to the inversive plane; problems solved using inversion; orthogonal circles and pencils of coaxial circles.

Prerequisite: Mathematics 69.218★.

Lecture three hours a week and one hour tutorial.

Mathematics 69.326★

Plane Projective Geometry

Axioms of Desarguesian geometry, principle of duality; projectivities, perspectivities, and the fundamental theorem; collineations (homologies and elations); correlations (polarities and conics); algebraic model; introduction to finite projective planes.

Precludes additional credit for Mathematics 70.326★.

Prerequisite: Mathematics 69.218★.

Lectures three hours a week and one hour tutorial.

Mathematics 69.344★

Ordinary Differential Equations II

Series solutions of ordinary differential equations of second order about regular singular points; asymptotic solutions. Systems of ordinary differential equations of first order; matrix methods. Existence and

uniqueness theorems. Nonlinear autonomous systems of order 2; qualitative theory. Numerical solutions of ordinary differential equations.

Precludes additional credit for Mathematics 70.308★.

Prerequisites: Mathematics 69.244★, 69.208★; and 69.112 or 69.217★.

Lectures three hours a week and one hour tutorial.

Mathematics 69.350

Statistical Theory

Discrete and continuous distributions: moment-generating functions, marginal and conditional distributions, transformation theory, limiting distributions; point and interval estimation, sufficient statistics, hypothesis testing, chi-square tests with enumeration data.

Precludes additional credit for Mathematics 70.350.

Prerequisites: Mathematics 69.208★ (or 69.201 or 69.202) and one of 69.250, 69.257★, 69.259★, 69.267★, Economics 43.220 or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 69.352★

Probability and Statistics

Axioms of probability; conditional probability and independence; joint, marginal and conditional distributions; mathematical expectation, discrete and continuous distributions: binomial, negative binomial, hypergeometric, Poisson, gamma, normal; moment-generating functions, central limit theorem; sampling distributions; estimation: method of moments, maximum likelihood, minimum variance; confidence intervals; hypothesis testing for one and two populations. Engineering applications: acceptance sampling, quality control charts, life testing and statistical reliability.

Restricted to students in the Faculty of Engineering. This course may not be used to meet the 300-level course requirements in any Major or Honours program in Mathematics and Statistics.

Precludes additional credit for Mathematics 69.250, 69.257★, 69.265★, 69.266★, 70.259★ and Economics 43.220.

Prerequisite: Mathematics 69.201.

Lectures three hours a week and one hour laboratory.

Mathematics 69.353★

Regression Analysis

Review of simple and multiple regression with matrices, Gauss-Markov theorem, polynomial regression, indicator variables, residual analysis, weighted least squares, variable selection techniques, nonlinear regression, correlation analysis and autocorrelation. Computer packages are used for statistical analyses. Precludes additional credit for Mathematics 70.355★, Economics 43.476★, and for Mathematics 69.351 (no longer offered); Psychology 49.300 is precluded for additional credit for students registered in a Mathematics program.

Prerequisites: (i) Mathematics 69.259★ or 69.267★, or Economics 43.220, or equivalent; and (ii) Mathematics 69.112 or 69.117★ or 69.119★ or equivalent; or permission of the Department.

Lectures three hours a week and one hour laboratory.

Mathematics 69.354★

Analysis of Variance and Experimental Design

Single and multifactor analysis of variance, orthogonal contrasts and multiple comparisons, analysis of covariance; nested, crossed and repeated measures designs; completely randomized, randomized block, Latin squares, factorial experiments, related topics. Computer packages are used for statistical analyses. Precludes additional credit for Mathematics 70.355★, and for Mathematics 69.351 (no longer offered); Psychology 49.300 is precluded for additional credit for students registered in a Mathematics program.

Prerequisite: Mathematics 69.353★ or permission of the Department.

Lectures three hours a week and one hour laboratory.

Mathematics 69.357★

Sampling Methodology

An introduction to the sample survey as a vehicle for information collection by government, business, scientific and social agencies. Topics include: planning a survey, questionnaire design, simple random, stratified, systematic and cluster sampling designs, estimation methods, problem of non-response; related topics. Illustrations from a variety of fields.

Prerequisite: One of Mathematics 69.257★, or 69.259★, 69.266★, 69.267★, Economics 43.220 or equivalent; or permission of the Department.

Lectures three hours a week and one hour laboratory.

Mathematics 69.375★

Mathematical Methods I

Laplace transforms, Fourier series and Fourier transforms, solutions of partial differential equations of mathematical physics, boundary value problems, applications.

Restricted to students in Engineering or Physics.

Precludes additional credit for Mathematics 69.304★, Physics 75.388★; and for Physics 75.386 (no longer offered).

Prerequisite: Mathematics 69.201.

Lectures three hours a week and one hour tutorial.

Mathematics 69.376★

Mathematical Methods II

Analytic functions, contour integration, residues, applications. Matrix theory, eigenvalues, diagonalization of symmetric matrices, applications.

Restricted to students in Engineering or Physics.

Precludes additional credit for Mathematics 69.307★, 70.307★, Physics 75.387★; and for Physics 75.386 (no longer offered).

Prerequisite: Mathematics 69.201.

Mathematics 69.381★

Linear Programming

Formulation of linear programming problems, the simplex method, duality theory, implementations, extensions and applications. Network flow problems and the network simplex method.

Precludes additional credit for Economics 43.404★, Engineering 94.320★.

Prerequisite: Mathematics 69.112 or 69.217★, or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 69.384★

Data Structures and Algorithm Analysis

Review of basic data structures such as stacks, queues and lists. Algorithms for their implementation. Representation of arrays, sets and relations. Trees and graphs — representation and applications. Basic techniques of design and analysis of efficient algorithms for sorting and searching. Hashing, dynamic storage allocation, garbage collection. (Also listed as Computer Science 95.384★.)

Prerequisites: A 200-level Mathematics course and Computer Science 95.202★.

Lectures three hours a week.

Mathematics 69.386★

Numerical Analysis

Elementary discussion of error, polynomial interpolation, quadrature, linear systems of equations and matrix inversion, non-linear equations, difference equations and ordinary differential equations. (Also listed as Computer Science 95.386★.)

Prerequisites: (i) Mathematics 69.102 or 69.207★ (or 69.201 or 69.202); and (ii) Mathematics 69.112 or 69.217★; and (iii) a working knowledge of one of Fortran, Pascal, or C.

Lectures three hours a week and one hour tutorial.

Mathematics 69.387★

Mathematical Software

Incorporation of basic numerical methods into efficient, reliable software. The course includes examination of existing software systems, e.g., linear systems, non-linear systems, optimization, or differential equations. (Also listed as Computer Science 95.387★.)

Prerequisite: Mathematics 69.386★.

Lectures three hours a week and one hour tutorial.

Mathematics 69.389★

Computational Number Theory

This course treats a number of topics from elementary number theory in a computational and algorithmic way. The topics are chosen from: primality testing, factorization of integers and polynomials, solution of diophantine equations, approximation of irrationals by rationals.

Prerequisites: Mathematics 69.218★ or 69.311★ or 70.210; knowledge of a computer language is also required.

Lectures three hours a week and one hour tutorial.

Mathematics 69.397★

Directed Studies

Available only to students whose program requires a half credit not offered by the Department of Mathematics and Statistics.

Mathematics Courses for Honours Students

Mathematics 70.200

Calculus and Introductory Analysis

Higher dimensional calculus, chain rule, gradient, line and multiple integrals with applications. Use of implicit and inverse function theorems. Real number axioms, limits, continuous functions, differentiability, infinite series, uniform convergence, the Riemann integral.

Precludes additional credit for Mathematics 69.201, 69.202, 69.208★, 69.309★.

Prerequisites: (i) Mathematics 69.102 or 69.207★; and (ii) Mathematics 69.112 or 69.117★; or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 70.210

Algebra

Set theory, algebraic systems, vector spaces, inner product spaces, linear transformations, determinants, quadratic forms, selected applications.

Precludes additional credit for Mathematics 69.218★ or 69.311★.

Prerequisite: Mathematics 69.112 or 69.217★.

Lectures three hours a week and one hour tutorial.

Mathematics 70.259★

Statistics: Theory and Practice

This course builds on the probability theory and applications developed in the first term of Mathematics 70.260. Topics include: computational and inferential statistics; basic distributions (normal, t, chi-square, F); maximum likelihood and moment estimators; properties of estimators; confidence intervals (one and two-sample procedures); testing of simple and composite hypotheses; regression and analysis of variance models; non-parametric procedures; contingency tables.

Computer packages are used for statistical analyses. Precludes additional credit for Mathematics 69.257★, 69.259★, 69.266★, 69.267★, 69.352★, Economics 43.220.

Prerequisite: Mathematics 70.260 (may be taken concurrently).

Lectures three hours a week and one hour tutorial/laboratory.

Mathematics 70.260

Introduction to the Applications of Mathematics

Ordinary differential equations of order one and two. Systems of linear differential equations. Existence and uniqueness. Difference equations. Modelling with differential and difference equations. Numerical solutions. Random variables, distribution functions, joint and conditional distributions, generating functions. Stochastic models, Markov chains. Simulation. Applications to areas such as reliability, queueing, econometrics, statistical mechanics and operations research.

Precludes additional credit for Mathematics 69.201, 69.202, 69.244★, 69.265★, and for 69.245★ (no longer offered).

Prerequisites: Mathematics 69.102 (or 69.207★) and 69.112 (or 69.217★); knowledge of a computer language is also required.

Lectures three hours a week and one hour tutorial.

Mathematics 70.297★

Directed Studies

Available only to Honours students whose program requires a half credit not offered by the Department of Mathematics and Statistics.

Boundary Value Problems

Note:

Mathematics 69.304★, Boundary Value Problems, may be taken for credit as a 300-level Honours Mathematics course, by students in any Honours

program in the Department of Mathematics and Statistics. (See p. 397.)

Mathematics 70.301 ★

Real Analysis

Metric spaces; limits, continuity, open and closed sets, compactness, connectedness and completeness. Uniform convergence of sequences of functions, as convergence in metric spaces of bounded and continuous functions. Weierstrass approximation theorem. Contraction mappings and applications to integral and differential equations.

Prerequisite: Mathematics 70.200 or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 70.302 ★

Advanced Calculus

Vector fields on surfaces. The functions div, curl and grad. Line and surface integrals. The divergence theorem and Stokes' theorem. Exterior algebra. Stokes' formula. Functions of bounded variation. The Riemann-Stieltjes integral.

Prerequisite: Mathematics 70.200 or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 70.307 ★

Functions of a Complex Variable

Analytic functions, contour integration, residue calculus, conformal mapping.

Precludes additional credit for Mathematics 69.307 ★, 69.376 ★, Physics 75.387 ★; and for Physics 75.386 (no longer offered).

Prerequisite: Mathematics 70.200 or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 70.308 ★

Ordinary Differential Equations

Analytic ordinary differential equations: series solutions of ordinary differential equations about ordinary and regular singular points. Asymptotic solutions. Sturm-Liouville theory. Bessel and Legendre functions. Fourier series.

Precludes additional credit for Mathematics 69.344 ★, and Physics 75.388 ★; and for Physics 75.386 (no longer offered).

Prerequisites: Mathematics 70.200 and 70.260.

Lectures three hours a week and one hour tutorial.

Mathematics 70.310

Modern Algebra

Graphs, groups, rings, integral domains, fields; polynomial domains and linear algebra with applications to enumeration problems, optimization of combinatorial problems, coding theory.

Precludes additional credit for Mathematics 69.310 and 69.318 ★.

Prerequisite: Mathematics 70.210 or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 70.326 ★

Foundations of Projective Geometry

Definition of a general projective plane and immediate consequences; finite planes (combinatorial results, sub-planes, incidence matrices) and planar ternary rings; collineations, role of Desargues' con-

figuration, examples of types of planes.

Precludes additional credit for Mathematics 69.326 ★.

Prerequisite: Mathematics 70.210.

Lectures three hours a week and one hour tutorial.

Mathematics 70.336 ★

Elements of Set Theory

Informal treatment of the axioms of set theory. Development of the systems of natural numbers, integers, rational numbers and real numbers, using both Dedekind sections and Cauchy sequences based on Peano's axioms. The axiom of choice, Zorn's lemma, well-ordering. The Schröder-Bernstein theorem, cardinal numbers, ordinal numbers, transfinite induction, cardinal and ordinal arithmetics.

Prerequisite: Mathematics 70.210 or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 70.345 ★

Classical Mechanics

Axiomatic approach to Newtonian mechanics. Simple harmonic motion. One- and two-dimensional projectiles. Central forces; planetary orbits. Systems of particles; collision problems. Moments and products of inertia; two-dimensional rigid body motions. Generalized coordinates; Lagrange's equation. Moving axes; motion near the surface of the earth.

Precludes additional credit for Mathematics 69.345 ★ (no longer offered).

Prerequisites: Mathematics 70.200 (or 69.208 ★) and 70.260 (or 69.244 ★).

Lectures three hours a week and one hour tutorial.

Mathematics 70.346 ★

Autonomous Dynamical Systems

Basic concepts of dynamical systems. Stability; limit cycles; Lyapunov's direct method. Theory of autonomous dynamical systems. Volterra systems; principle of competitive exclusion in population biology. The threshold theorem of epidemiology. Basic concepts of nonequilibrium statistical mechanics.

Prerequisites: Mathematics 70.200 and 70.260.

Lectures three hours a week and one hour tutorial.

Mathematics 70.350

Mathematical Statistics

Random variables and moment-generating functions; concepts of conditioning and correlation; laws of large numbers, central limit theorem; multivariate normal distribution; distributions of functions of random variables, sampling distributions, order statistics, empirical distribution functions, Monte Carlo methods, elements of decision theory, point estimation, interval estimation, tests of hypotheses; robustness, nonparametric methods.

Precludes additional credit for Mathematics 69.350.

Prerequisites: (i) Mathematics 70.260 (or 69.265 ★) and (ii) Mathematics 70.200 (or a grade of C+ or better in 69.208 ★); or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 70.355 ★

Regression and Experimental Design

Linear regression - theory and methods; design of experiments - analysis of the completely randomized, randomized block and Latin square designs; multiple comparisons; factorial experiments; related topics.

Precludes additional credit for Mathematics 69.353★, 69.354★, Economics 43.476★, and for 69.351 (no longer offered). Psychology 49.300 is precluded for additional credit for students registered in a Mathematics program.

Prerequisites: (i) Mathematics 70.259★ or 69.259★; and (ii) 69.112 or 69.217★; and (iii) 69.350 or 70.350 (which may be taken concurrently); or permission of the Department.

Lectures three hours a week and one hour laboratory.

Mathematics 70.356★

Stochastic Processes and Queueing Theory

Stochastic modelling, Markov chains, birth and death processes, renewal theory. Queueing theory: analytical and simulation methods. Applications to computer systems, operations research and social sciences.

Prerequisites: Mathematics 70.260; or an average grade of C+ or better on Mathematics 69.208★, 69.217★, and 69.265★; or an unweighted average grade of C+ or better on Mathematics 69.208★, 69.112, and 69.265★; or permission of the Department.

Lectures three hours a week and one hour tutorial.

Mathematics 70.385★

Discrete Structures and Applications

Enumeration: elementary methods, inclusion and exclusion, recurrence relations, generating functions and applications. Graph theory and algorithms: connectivity, planarity, Hamilton and Euler paths. Error-correcting codes. (Also listed as Computer Science 95.385★.)

Prerequisite: One of Mathematics 69.218★, 69.311★, or 70.210.

Lectures three hours a week and one hour tutorial.

Mathematics 70.390★

Mathematical Problem Solving

An introduction to the techniques of mathematical problem solving, including: pattern recognition, symmetry exploitation, case by case analysis, context recognition, arguments by contradiction, counting arguments, extreme case analysis, equivalent problem formulation, solution by generalization. Problems treated are of a high level of difficulty and require a breadth of mathematical knowledge as well as considerable technical skills. Problems are chosen from many areas of mathematics including: analysis, number theory, geometry, algebra, probability, combinatorics, graph theory.

This course is normally restricted to Honours students in Mathematics and Statistics.

Prerequisites: At least two courses from: Mathematics 70.200, 70.210, 70.260, or permission of the Department.

A selection of courses in the 400 series will be offered.

Mathematics 70.401★

Vector Calculus

Linear transformations, multiple integrals, differential forms, vector functions and fields, vector calculus, applications.

Prerequisite: Mathematics 70.302★ or permission of the Department.

Mathematics 70.403★

Functional Analysis

Banach spaces and bounded linear operators, Hahn-Banach extension and separation, dual spaces, bounded inverse theorems, uniform boundedness principle, applications. Compact operators. Differential calculus in Banach spaces, inverse and implicit function theorems and their application to differential equations.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.508, for which additional credit is precluded.

Prerequisite: Mathematics 70.301★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.407★

Measure and Integration Theory

Lebesgue measure and integration on the real line; sigma algebras and measures; integration theory; Lp spaces; Fubini's theorem; decomposition theorems and Radon-Nikodym derivatives.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.507, for which additional credit is precluded.

Prerequisite: Mathematics 70.301★ or 70.302★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.415★

Rings and Modules

Fundamental concepts in rings and modules, structure theorems, applications.

Prerequisite: Mathematics 70.310 or permission of the Department.

Lectures three hours a week.

Mathematics 70.416★

Group Theory

Fundamental principles as applied to abelian, nilpotent, solvable, free and finite groups; representations. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.516, for which additional credit is precluded.

Prerequisite: Mathematics 70.310 or permission of the Department.

Lectures three hours a week.

Mathematics 70.417★

Commutative Algebra

Fields, including algebraic and transcendental extensions, Galois theory, valuation theory; Noetherian commutative rings, including Noether decomposition theorem and localization.

Prerequisite: Mathematics 70.310 or permission of the Department.

Lectures three hours a week.

Mathematics 70.418★

Homological Algebra and Category Theory

Axioms of set theory; categories, functors, natural transformations; free, projective, injective and flat modules; tensor products and homology functors, derived functors; dimension theory.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.518, for which additional credit is precluded.

Prerequisite: Mathematics 70.310 or permission of the Department.

Lectures three hours a week.

Mathematics 70.425★

Introduction to General Topology

Topological spaces, maps, subspaces, product and identification topologies, separation axioms, compactness, connectedness.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.525, for which additional credit is precluded.

Prerequisite: Mathematics 70.301★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.426★

Introduction to Algebraic Topology

An introduction to homotopy theory. Topics include the fundamental group, covering spaces and the classification of two-dimensional manifolds.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.526, for which additional credit is precluded.

Prerequisites: Mathematics 70.310 and 70.425★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.427★

Foundations of Geometry

A study of at least one modern axiom system of Euclidean and non-Euclidean geometry, embedding of hyperbolic and Euclidean geometries in the projective plane, groups of motions, models of non-Euclidean geometry.

Prerequisite: Mathematics 70.310 (may be taken concurrently) or permission of the Department.

Lectures three hours a week.

Mathematics 70.428★

Introduction to Differentiable Manifolds

A study of differentiable manifolds from the point of view of either differential topology or differential geometry. Topics such as smooth mappings, transversality, intersection theory, vector fields on manifolds, Gaussian curvature, Riemannian manifolds, differential forms, tensors and connections are included.

Prerequisite: Mathematics 70.301★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.435★

Analytic Number Theory

Dirichlet series, characters, Zeta-functions, prime number theorem, Dirichlet's theorem on primes in arithmetic progressions, binary quadratic forms.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.535, for which additional credit is precluded.

Prerequisite: Mathematics 70.307★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.436★

Algebraic Number Theory

Algebraic number fields, bases, algebraic integers, integral bases, arithmetic in algebraic number fields, ideal theory, class number.

Also offered at the graduate level, with additional or

different requirements, as Mathematics 70.536, for which additional credit is precluded.

Prerequisite: Mathematics 70.310 (may be taken concurrently) or permission of the Department.

Lectures three hours a week.

Mathematics 70.445★

Analytical Dynamics

Dynamics of a rigid body in three dimensions. Euler angles. Inertia tensor, Euler's equations of motion. Hamilton's equations. Canonical transformation. Hamilton-Jacobi theory. Theory of small oscillations.

Prerequisite: Mathematics 70.345★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.446★

Hydrodynamics and Elasticity

Properties of Cartesian tensors; fundamental laws; motion of fluids (perfect and viscous); elastic materials.

Prerequisites: Mathematics 70.307★, 70.345★ and 70.346★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.447★

Tensor Analysis and Relativity Theory

Development of tensor analysis, application to Riemannian spaces and relativity theory.

Prerequisites: Mathematics 70.345★ and 70.346★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.450★

Parametric Estimation

Preliminaries on probability theory; exact and asymptotic sampling distributions; unbiasedness, consistency, efficiency, sufficiency and completeness; properties of maximum likelihood estimators; least squares estimation of location and scale parameters based on order statistics and sample quantiles; Best Asymptotically Normal (BAN) estimators.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.560, for which additional credit is precluded.

Prerequisite: Mathematics 70.350 or permission of the Department.

Lectures three hours a week.

Mathematics 70.451★

Probability Theory

Introduction to probability, characteristic functions, probability distributions, limit theorems.

Prerequisites: Mathematics 70.301★ and 70.356★, or permission of the Department.

Lectures three hours a week.

Mathematics 70.452★

Survey Sampling

Basic concepts in sampling from finite populations; simple random sampling; stratified sampling; choice of sampling unit; cluster and systematic sampling; introduction to multistage sampling; ratio estimation; sampling with unequal probabilities and with replacement; replicated sampling; related topics.

Prerequisites: (i) Mathematics 70.259★, or 69.259★ and (ii) either 70.350 or a grade of C+ or better in 69.350, or permission of the Department.

Lectures three hours a week.

Mathematics 70.453★**Applied Multivariate Analysis**

Selected topics in regression and correlation non-linear models. Multivariate statistical methods, principal components, factor analysis, multivariate analysis of variance, discriminant analysis, canonical correlation, analysis of categorical data.

Prerequisites: Mathematics 70.355★, or 69.350 and 69.354★, or permission of the Department.

Lectures three hours a week.

Mathematics 70.456★**Non-Parametric Methods**

Order statistics; rank statistics; permutations; uniform distribution over the space of permutations; distribution of linear rank statistics; approximate normality of linear rank statistics; hypothesis of randomness; stochastic ordering; Wilcoxon test, median tests, Van Der Waerden test, Kolmogorov-Smirnov test; hypothesis of symmetry and random blocks; hypothesis of independence; treatment of ties; power and efficiency of rank tests.

Prerequisite: Mathematics 70.350 or permission of the Department.

Lectures three hours a week.

Mathematics 70.457★**Statistical Inference**

Sufficient statistics, simple and composite hypotheses, most powerful and similar region test, distribution-free tests, confidence intervals, goodness-of-fit and likelihood ratio tests, large sample theory, Bayesian and likelihood methods, sequential tests.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.551, for which additional credit is precluded.

Prerequisite: Mathematics 70.450★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.458★**Stochastic Models**

Review of discrete Markov chains and Poisson processes; pure jump Markov processes including the Q-matrix approach; the Kolmogorov equations; classification of states; stationary and limiting distributions; renewal theory.

Prerequisite: Mathematics 70.356★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.459★**Advanced Mathematical Modelling**

Real life situations in the physical, social, and life sciences are often modelled using mathematical tools. This course will examine various models and techniques used in their analysis, e.g., matrix procedures in connection with population models. Students will use a computer package to obtain numerical results.

Prerequisites: Mathematics 70.260 (or 69.244★ and 69.265★); or 70.356★; or permission of the Department.

Lectures three hours a week.

Mathematics 70.460★**Case Studies in Operations Research**

This course emphasizes the application of the principles of Operations Research to a number of practical

problems that arise in business, management, and science. Students will be expected to prepare and present at least one case, and to read and analyze cases in the published literature. There will also be cases presented by visiting practitioners.

Note: this course is designed for students in their final year in Honours Operations Research. Students in Honours Mathematics/Statistics programs may only take this course as a free option.

Prerequisites: Mathematics 69.259★ (or 70.259★) and 69.381★; or permission of the Department.

Seminars three hours a week.

Mathematics 70.470★**Partial Differential Equations**

First order linear, quasi-linear, and non-linear equations; second order equations in two and more variables; systems of equations; the wave equation; Laplace and Poisson equations, Dirichlet and Neumann problems; Green's functions.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.546, for which additional credit is precluded.

Prerequisites: Mathematics 70.308★ and one of 70.302★ or 70.307★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.471★**Topics in Partial Differential Equations**

Theory of distributions, initial-value problems based on 2-dimensions wave equations, Laplace transform, Fourier integral transform, diffusion problems, Helmholtz equation with application to boundary and initial-value problems in cylindrical and spherical coordinates.

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.547, for which additional credit is precluded.

Prerequisites: Mathematics 70.308★ and one of 70.302★ or 70.307★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.472★**Integral Transforms**

Laplace, Fourier, Hankel and Mellin transforms, selection of a suitable transform for a given partial differential equation boundary value problem. Operational properties of transforms. Inversion theorems. Approximate evaluation of inversion integrals for small and large values of parameter. Application to the solution of integral equations.

Prerequisite: Mathematics 70.307★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.473★**Qualitative Theory of Ordinary Differential Equations**

Ordinary differential equations: existence-uniqueness theorems, vector formulation for systems; stability theory, Lyapunov theorems, perturbation theorems and structural stability; Poincaré-Bendixon theory.

Prerequisites: Mathematics 70.301★, 70.308★, 70.346★.

Lectures three hours a week.

Mathematics 70.481★

Topics in Combinatorics

An in-depth study of one or more topics from: generating functions, Polya's theory of counting, block designs, coding theory, partially ordered sets and Ramsey theory.

Prerequisites: Mathematics 70.210 and 70.385★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.482★

Introduction to Mathematical Logic

Symbolic logic, propositional and predicate calculi, set theory and model theory, completeness.

Prerequisite: Mathematics 70.210 or permission of the Department.

Lectures three hours a week.

Mathematics 70.483★

Computable Functions

Recursive functions and computability, algorithms, Church's thesis, Turing machines, computational logic, NP-completeness. (Also listed as Computer Science 95.483★.)

Prerequisite: Mathematics 70.210 or 70.385★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.485★

Theory of Automata

Finite automata and regular expressions, properties of regular sets, context-free grammars, pushdown automata, deterministic context-free languages. Turing machines, the Chomsky hierarchy. Undecidability, intractable problems. (Also listed as Computer Science 95.485★.)

Also offered at the graduate level, with additional or different requirements, as Mathematics 70.565, for which additional credit is precluded.

Prerequisite: Mathematics 70.385★ or 70.310 or permission of the Department.

Lectures three hours a week.

Mathematics 70.486★

Numerical Linear Algebra

Study of matrix inversion techniques; techniques of finding eigenvalues and eigenvectors, solution of systems of linear equations; direct and indirect methods, their comparison and error analysis; applications

in optimization and other areas. (Also listed as Computer Science 95.486★.)

Prerequisites: Mathematics 69.112 or 69.217★; and Mathematics 70.200 or 69.309★, or permission of the Department.

Lectures three hours a week.

Mathematics 70.487★

Game Theory

Two-person zero-sum games; infinite games; multi-stage games; differential games; utility theory; two-person general-sum games; bargaining problem; n-person games; games with a continuum of players. Also offered at the graduate level, with additional or different requirements, as Mathematics 70.567, for which additional credit is precluded.

Prerequisite: Mathematics 70.301★ or permission of the Department.

Lectures three hours a week.

Mathematics 70.488★

Graph Theory and Algorithms

Paths, circuits, Eulerian and Hamiltonian graphs, connectivity, colouring problems, matching, Ramsey theory, network flows.

Prerequisites: Mathematics 70.385★ or 70.310, or permission of the Department.

Lectures three hours a week.

Mathematics 70.495★

Honours Project

Consists of a written report on some approved topic or topics in the field of mathematics, together with a short lecture on the report.

Prerequisite: Honours Mathematics students only, see p. 386.

Mathematics 70.496★

Directed Studies

Prerequisite: Honours Mathematics students only.

Mathematics 70.497★

Directed Studies

Available only to Honours students whose program requires a half-credit not offered by the Department of Mathematics and Statistics.

(Engineering)

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Chair
R. Bell

Teaching Staff

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H.I.H. Saravanamuttoo
J.Z. Sasiadek
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D.A. Staley
P.V. Straznicky
C.L. Tan
J.Y. Wong

Associate Professors

F.F. Afagh
F.W. Black
P.R. Frise
J.M.J. McDill
W.G. Richarz
M.J. Worswick

Assistant Professors

A. Artemev
P.E. Barrington
J. Beddoes
J.A. Gaydos
D.L. Russell
M.I. Yaras

Adjunct Professors

M.C. deMalherbe
G. Kardos
J. Lukasiewicz
J.T. Rogers

Adjunct Research Professors

K.R. Goheen, *Ryerson Polytechnic University*
A. Jablonski, *Canadian Space Agency*
H. Moustapha, *Pratt & Whitney Canada*
T. Mussivand, *University of Ottawa Heart Institute*
R.K. Singhal, *Canadian Space Agency*
J. Sinkiewicz, *M.I.T.*
W. Tyson, *Natural Resources Canada*
F. Vigneron, *Canadian Space Agency*
G. Vukovich, *Canadian Space Agency*
W. Wallace, *National Research Council*

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Mechanical and Aerospace Core Courses

Engineering 86.230★

Introductory Fluid Mechanics

Fluid properties. Units. Fluid statics; pressure distribution in fluid at rest; hydrostatic forces on plane and curved surfaces; buoyancy. Kinematics and dynamics of fluid motion: concepts of streamline, control volume, steady and one-dimensional flows; continuity, Euler, Bernoulli, steady flow energy, momentum and moment of momentum equations; applications. Prerequisites: Mathematics 69.104★ and 69.114★ and Engineering 91.111★.

Lectures three hours a week, laboratory and problem analysis three hours a week.

Engineering 86.270★

An Introduction to Engineering Materials

Materials (metals, alloys, polymers) in engineering service; relationship of interatomic bonding, crystal structure and defect structure (vacancies, dislocations) to material properties; polymers, thermoplastic, thermosetting, viscoelastic behaviour; phase diagrams and alloys; microstructure control (heat treatment) and mechanical properties; material failure; fracture, fatigue, creep, corrosion types, theory and control.

Precludes additional credit for Engineering 88.271★. Prerequisites: Physics 75.101★, 75.102★, Chemistry 65.111★ and Mathematics 69.104★.

Lectures three hours a week, problem analysis and laboratories three hours a week.

Engineering 86.304★

Dynamics of Machinery

Kinematic and dynamic analysis and synthesis of mechanisms and machines. Design and analysis considerations in reciprocating and rotating machinery. Vibrations in machinery, vibrations of systems with more than one degree of freedom. Vibration and shock isolation. Experimental investigation of dynamic systems.

Prerequisite: Engineering 91.211★.

Lectures three hours a week.

Engineering 86.322★

Solid Mechanics I

This course builds upon the material of Engineering 82.220★ and provides the essential fundamentals of engineering solid mechanics. Topics include: elementary theory of elasticity; torsion and bending of non-circular sections; energy methods; and plastic collapse.

Precludes additional credit for Engineering 82.322★ (no longer offered) and 82.444★.

Prerequisite: Engineering 82.220★.

Lectures three hours a week, problem analysis and laboratory three hours a week.

Engineering 86.333★

Fluid Mechanics

Review of control volume analysis; dimensional analysis and similitude; viscous flow theory, hydrodynamic lubrication and introduction to boundary layers; compressible flow, isentropic flow relations, flow in ducts and nozzles, effects of friction and heat transfer, normal and oblique shocks, two-dimensional isentropic expansion.

Prerequisite: Engineering 86.230★.

Lectures three hours a week, problem analysis and laboratory three hours a week.

Engineering 86.340★

Applied Thermodynamics

Mixture of perfect gases and vapours, psychrometry, combustion processes, differences between real and ideal cycles, gas cycles and vapour cycles for power and refrigeration plant, principles of turbomachines.

Prerequisites: Engineering 91.241★ and Third-year registration.

Lectures three hours a week.

Engineering 86.352★

Feedback Control Systems

Control systems and terminology. Design of automatic control systems; analysis and synthesis, transfer function, stability. Laplace and Fourier transforms, time and frequency design techniques, performance criteria. Linear and non-linear systems. State variables. Discrete and digital systems; z-transforms. Control system components; hydraulic, pneumatic, electronic. Introduction to micro-processors and their applications. Automation of industrial processes.

Prerequisites: Mathematics 69.375★ and Engineering 94.260★/94.360★.

Lectures three hours a week.

Engineering 86.390★

Mechanical and Aerospace Engineering Laboratory I

A laboratory course in which each student performs a series of laboratory exercises dealing with a wide range of mechanical engineering topics. This course is intended to give students the opportunity to relate theory and practice and to provide experience with modern engineering equipment and measurement techniques. Good reporting practice is emphasized. Laboratory six hours a week.

Engineering 86.412★

Engineering Materials: Strength and Fracture

This course covers an introduction to the analysis and prevention of failures in metals and composite materials, the micro-mechanisms by which fracture occurs and the conditions that lead to the growth of cracks. The following topics are addressed: mechanisms of fracture and transition temperature effects, an introduction to the discipline of fracture mechanics, basic phenomenon of fatigue, environmentally assisted cracking, non-destructive evaluation and testing and an introduction to the mechanical properties of structural composites.

Prerequisites: Engineering 86.270★ and 86.322★.

Lectures three hours per week.

Engineering 86.491★

Mechanical and Aerospace Engineering Laboratory II

A laboratory course in which each student performs a series of laboratory exercises dealing with a wide range of mechanical engineering topics. This course is intended to give students the opportunity to relate theory and practice and to provide experience with modern engineering equipment and measurement techniques. Good reporting practice is emphasized. Lectures and tutorials one hour a week, laboratory five hours a week.

Engineering 86.495★

Professional Practice Seminar

This course is intended to familiarize future professional engineers with current engineering practice and its relationship to other disciplines and to society in general. A sequence of seminars is presented by faculty and external lecturers covering topics such as the Professional Engineers Act, professional ethics, responsibilities of professional engineers and engineering practice appropriate to the discipline. Also included are seminars on the impact of technology on society. The development of communication skills, both oral and written, is emphasized. Grades for this course are *Sat* (satisfactory), or *Uns* (unsatisfactory). Precludes additional credit for Engineering 82.495★, 94.395★ and 97.395★.

Prerequisite: Fourth-year registration.

Seminars three hours a week.

Engineering 86.496★

Special Topics in Mechanical and Aerospace Engineering

At the discretion of the Faculty, a course dealing with selected advanced topics of interest to Aerospace and Mechanical Engineering students may be offered.

Prerequisite: Permission of the Department.

Aerospace Engineering

Engineering 87.302★

Aerospace Design and Practice

Design approach and phases. Design integration. Influence of mission, aerodynamic, structural and reliability requirements on vehicle configuration. Sizing and configuration layout. Flight vehicle loads, velocity-load factor diagram. Structural design: overall philosophy, role in design process. Review of stress and deflection analysis. Bending and torsion in thin wall structures, membrane and bending stresses in plates and shells, stability.

Prerequisite: Third-year registration.

Lectures three hours a week, problem analysis three hours a week.

Engineering 87.311★

Lightweight Structures

Structural concepts; two- and three-dimensional stress-strain relationships; theory of elasticity; bending, torsion and shear in thin-walled beams having single or multi-cell sections; work and energy principles; deformation and force analysis of advanced structures, including stiffened thin-wall panels (flexibility, Rayleigh-Ritz and stiffness methods); finite ele-

ment methods. Stability and buckling of thin-walled, reinforced structures; influence of pressurization.

Prerequisite: Engineering 86.322★.

Lectures three hours a week.

Engineering 87.370★

Aerospace Materials and Manufacturing Methods

Properties, behaviour and manufacturing methods for metals, polymers and ceramics used in aerospace applications. Specialty alloys for gas turbines. Properties and manufacture of aerospace composites. Behaviour of materials in space.

Prerequisite: Engineering 86.270★.

Lectures three hours a week.

Engineering 87.403★

Aerospace Systems Design

Fatigue, safe life and damage tolerant design. Propulsion systems and integration, landing gear, control and other subsystems. Review of airworthiness regulations. Certification procedures. Component and full scale testing. Weight and cost estimation and control. System reliability. Selected case studies are examined. Design studies are undertaken of major aircraft and spacecraft components.

Prerequisite: Engineering 87.302★.

Lectures three hours a week, problem analysis three hours a week.

Engineering 87.430★

Acoustics and Noise Control

Behaviour of compressible fluids, sound waves and properties of sound sources; measurement of sound; human perception of sound; prediction methods based on energy considerations; sound propagation in realistic environments: outdoors, rooms, ducts; absorption and transmission loss, noise control; case studies.

Prerequisite: Mathematics 69.375★.

Lectures three hours a week.

Engineering 87.432★

Applied Aerodynamics and Heat Transfer

Differential equations of motion. Subdivision of flow into viscous and inviscid regions. Potential flow: superposition of simple potential flows; thin airfoil theory; finite wing theory. Viscous flow: thin shear layer approximations; integral and differential methods; laminar boundary layers; transition; the closure problem in turbulent flows; jets and wakes. Convective heat transfer: the thermal boundary layer; free convection. Compressible flow: one-dimensional isentropic flow; effects of friction and heat transfer; shock waves and expansions; two-dimensional supersonic flow. Introduction to hypersonic and rarefied gas flows. Convective heat transfer in high-speed flow: recovery factor.

Also offered at the graduate level, with additional or different requirements, as Engineering 88.500★, for which additional credit is precluded.

Prerequisite: Engineering 86.333★.

Lectures three hours a week.

Engineering 87.434★

Computational Fluid Dynamics

Review of differential equations of motion. Numerical integration of ordinary differential equations: momentum integral equation for laminar and turbulent boundary layers. Singularity and finite-difference

methods for potential flows; two- and three-dimensional panel methods; vortex lattice methods. Finite-difference methods for second-order partial differential equations; boundary layers; parabolized and full Navier-Stokes equations; transonic small-disturbance equations. Method of characteristics. Panel methods for supersonic flows. The course will involve several computer-based assignments.

Prerequisite: Engineering 87.432★.

Lectures three hours a week.

Engineering 87.436★

Aircraft and Spacecraft Performance and Dynamics

Morphology of flight vehicles: basic components of fixed and rotary wing aircraft and spacecraft and their function. Historical development. Performance analysis of fixed wing aircraft: drag estimation, thrust generation, take-off and landing, rate of climb, speed, endurance, payload/range and steady state manoeuvres; operational economics. Performance analysis of rotor craft: rotor-blade motion, hovering and vertical ascent, forward flight, and autorotation; factors limiting performance. The basics of rocket propulsion; escape velocity; introductory orbital dynamics.

Prerequisite: Engineering 86.333★.

Lectures three hours a week.

Engineering 87.438★

Stability and Control of Aircraft

Static stability and control: force and moment equilibrium requirements; longitudinal stability requirements; neutral points. Manoeuvring flight (turns and pull-ups); control forces and control power requirements; flight envelope diagram. Directional stability and control; roll control; fin, rudder, aileron and dihedral requirements. Introduction to dynamic stability: axis systems; remarks on governing equations; phugoid and short period modes; lateral dynamic modes. Influence of airframe flexibility. Ground-based model testing; full-scale flight testing.

Also offered at the graduate level, with additional or different requirements, as Engineering 88.511★, for which additional credit is precluded.

Prerequisite: Engineering 86.333★.

Lectures three hours a week.

Engineering 87.442★

Aerospace Propulsion

Propulsion requirements, effects of Mach Number, altitude, and application; basic propeller theory; propeller, turboshaft, turbojet, turbofan and rocket; cycle analysis and optimization for gas turbine power plant; inter-relations between thermodynamic, aerodynamic and mechanical designs; rocket propulsion; selection of aero engines.

Precludes additional credit for Engineering 88.441★.

Prerequisites: Engineering 86.333★ and 86.340★.

Lectures three hours a week.

Engineering 87.454★

Avionics Systems

Historical developments and overview of requirements. Air data sensing and display. Communications systems. Navigation and landing systems; ground-based, inertial and satellite systems. Guidance and control for aircraft, rockets and spacecraft: autopilots; stability augmentation; active control; station and position keeping; sensor requirements; dis-

play techniques. Remote sensing. The emphasis in the course is on the physical principles on which the various systems are based and on vehicle/systems integration.

Prerequisites: Engineering 91.251★ and 94.360★.

Lectures three hours a week.

Engineering 87.462★

Introductory Aeroelasticity

Review of structural behaviour of lifting surface elements; bending, torsion, mass distribution, mode shapes and frequencies. Introduction to unsteady aerodynamic derivatives, reduced frequency dependence, compressibility effects. Outline of classical flutter analysis and brief introduction to discretization schemes. Some examples of aeroelastic effects on flight vehicles; on static and dynamic stability, flow divergence and aileron reversal, bending-torsion flutter of high aspect ratio lifting surfaces (the "flutter" engine), influence of stores configuration, flap-lag and pitch-lag instability of rotors. Test methods; aeroelastically scaled models in wind tunnels, flight flutter testing. Limitations to flight envelope of aircraft and rotorcraft due to aeroelastic effects.

Prerequisites: Engineering 86.333★ and 87.302★.

Lectures three hours a week.

Engineering 87.468★

Composite Materials

Reinforcing mechanisms in composite materials; material properties. Strength and elastic constants of unidirectional composites; failure criteria. Analysis of laminated plates; bending and eigenvalue problems. Environmental effects and durability. Damage tolerance of composites. Design of composite structures.

Prerequisite: Engineering 86.412★.

Lectures three hours a week.

Engineering 87.481★

Spacecraft Design

Types of spacecraft and mission requirements. Overall systems design considerations: configuration control during design; planning and scheduling. Environmental considerations during launch and in orbit: thermal, effect of vacuum, debris impact. Design implementation: mechanical, thermal, and electrical/electronic aspects. Spacecraft testing: vibrational, acoustic, vacuum, and thermal testing. Component testing. Simulation.

Prerequisites: Engineering 91.241★ and 87.302★ or 88.302★.

Lectures three hours a week.

Engineering 87.497

Aerospace Engineering Project

As part of the Fourth-year program, each student is required to participate in a major project in engineering analysis, design, development or research. One or more substantial projects, involving the design of an aerospace vehicle, device or structure, will be undertaken in the Department each year and students participate in this as design team members. The objective is to provide each student with an opportunity to exercise initiative, self-reliance, creative ability and engineering judgment while also developing an awareness of the problems of system integration and project management which typically

arise in aerospace projects. Results are submitted in the form of design reports and a final summary report. Design teams will be organized on or before the last day of classes in September.

Prerequisite: Fourth-year registration in the Aerospace program.

Mechanical Engineering

Engineering 88.271★

An Introduction to Electrical Engineering Materials

Structure and properties of materials (metals, alloys, polymers, ceramics, glasses, composites) used in electrical engineering; interatomic bonding - delocalized electrons, elementary band structure; crystal structure, directions, planes, silicon diamond cubic structure; atomic vibrations and heat transfer; polymers - thermosetting, thermoplastic, viscoelastic behaviour; ceramic and glass structures; dielectric polarization and materials; magnetic materials, hysteresis, domain behaviour; piezoelectric behaviour, transducers, oscillator material behaviour; optical materials, birefringence, colour centres, lasers; composites, mixture rules, filament structures.

Precludes additional credit for Engineering 86.270★.

Prerequisites: Physics 75.101★, 75.102★, Chemistry 65.111★ and Mathematics 69.104★.

Lectures three hours a week, problem analysis one and one-half hours a week.

Engineering 88.302★

Machine Design and Practice

The design of mechanical machine elements is studied from a theoretical and practical point of view. Topics covered are: design factors, fatigue, shafting, springs, gearing, bearings, flexible drive elements, brakes and clutches, fasteners and welded structures. Problem analysis emphasizes the application to real mechanical engineering problems.

Prerequisite: Engineering 86.322★.

Lectures three hours a week, problem analysis three hours a week.

Engineering 88.370★

Principles of Manufacturing Engineering

Manufacturing unit processes and material considerations. Casting techniques: solidification and heat flow theory, defect formation, casting design. Metal forming: elementary plasticity theory, plastic failure criteria, force and work calculations. Powder-forming techniques: theory and practice of powder consolidation, design considerations. Joining techniques: heat flow and defect formation theory, residual stresses. Machining theory and practice. NC machining. Heat treatment and surface hardening: diffusion theory, principles of wear resistance.

Prerequisite: Engineering 86.270★.

Lectures and tutorials three hours a week.

Engineering 88.403★

Mechanical Systems Design

The course emphasizes the design of mechanical systems. Topics to be covered include: establishing design criteria, conceptual design, design economics, value analysis, synthesis, optimization. The prob-

lem analysis involves synthesis of real life mechanical systems.

Prerequisite: Engineering 88.302★.

Lectures three hours a week, problem analysis three hours a week.

Engineering 88.406★

Vehicle Engineering I

The course emphasizes the engineering and design principles of road transport technology. Topics to be covered include: performance characteristics, handling behaviour and ride quality of road vehicles. The prediction and evaluation of the performance of road transport systems are included.

Prerequisites: Engineering 91.211★ and Third- or Fourth-year registration.

Lectures three hours a week.

Engineering 88.407★

Vehicle Engineering II

The course emphasizes the engineering and design principles of off-road transport technology and air cushion technology. Topics to be covered include: the mechanics of vehicle-terrain interaction - terra-mechanics, performance characteristics of off-road vehicles, steering of tracked vehicles, air cushion systems and their performance. The prediction and evaluation of the performance of off-road transport systems are included.

Prerequisites: Engineering 91.211★ and Third- or Fourth-year registration.

Lectures three hours a week.

Engineering 88.411★

Solid Mechanics II

This course is intended to extend the student's ability in design and stress analysis of engineering structures. Topics include: theory of elasticity, stress function approach in elasticity, stress concentrations, experimental stress analysis, plasticity, introduction to creep analysis, bending of thin axisymmetric plates and shells and introduction to the finite element method of stress analysis.

Prerequisite: Engineering 86.322★.

Lectures three hours a week.

Engineering 88.413★

Fatigue and Fracture Analysis

An introduction to linear elastic and elasto-plastic fracture mechanics. Fatigue design methods, fatigue crack initiation and crack growth, life prediction using Paris law and strain-life methods. Fatigue testing, scatter, mean stress effects and notches. Welded and built up structures, real load histories and corrosion fatigue. Damage tolerant design and fracture control plans. Applications and case histories.

Prerequisite: Engineering 86.412★.

Lectures three hours a week.

Engineering 88.414★

Vibration Analysis

Transient vibrations of single-degree-of-freedom systems. Free and forced vibrations of two-degrees-of-freedom systems. Numerical methods for multi-degree-of-freedom systems; influence coefficients; Dunkerley's equation; orthogonality of principal modes; method of matrix iteration; the Holzer-type problem; geared and branched systems. Vibration of continuous systems; longitudinal and torsional vibra-

tion of rods; lateral vibration of beams. Modal analysis techniques; non-linear vibration.

Prerequisite: Engineering 86.304★.

Lectures three hours a week.

Engineering 88.435★

Fluid Machinery

Types of fluid machines. Dimensional analysis and similarity, performance parameters, performance characteristics, running points. Cavitation. Velocity triangles, Euler pump and turbine equation, impulse and reaction. Radial-flow pumps, fans and compressors: analysis, design and operation. Radial-flow and mixed-flow turbines. Axial-flow pumps, fans and compressors: analysis and design by cascade and blade-element methods, staging, off-design performance. Axial-flow turbines. Fluid couplings and torque converters.

Also offered at the graduate level, with additional or different requirements, as Engineering 88.541★, for which additional credit is precluded.

Prerequisite: Engineering 86.333★.

Lectures three hours a week.

Engineering 88.441★

Power Plant Analysis

Criteria of merit; selection of power plant for transportation and power generation applications; interrelation among mechanical, thermodynamic and aerodynamic design processes; jet propulsion, turbojets and turbofans; alternative proposals for vehicular power plant; combined cycle applications.

Precludes additional credit for Engineering 87.442★.

Prerequisite: Engineering 91.241★.

Lectures three hours a week.

Engineering 88.443★

Energy Conversion and Power Generation

Energy sources and resources. Basic elements of power generation. Hydro-electric, fossil-fuel and fission-fuel power plants. Other methods of conversion. Future methods of conversion. Economic and environmental considerations. Power generation systems. Future power needs.

Prerequisite: Engineering 91.241★.

Lectures three hours a week.

Engineering 88.446★

Heat Transfer

An introduction to the mechanisms of heat transfer with emphasis on the basic fundamentals and practical solutions. Steady and transient conduction: solution by analytical and numerical methods and electrical analog techniques. Convective heat transfer: free and forced convection for laminar and turbulent flows; heat exchangers. Heat transfer by radiation between black and grey surfaces, radiation shields, solar radiation. Boiling and condensation heat transfer. Selected applications are covered.

Prerequisites: Engineering 86.333★ and Fourth-year registration.

Lectures three hours a week.

Engineering 88.447★

Heating, Ventilating and Air Conditioning

Comfort. Environmental demands for residential, commercial and industrial systems. Methods of altering and controlling environment. Air distribution. Refrigeration methods, equipment and controls.

Integrated year-round air-conditioning and heating systems; heat pumps. Cooling load and air-conditioning calculations. Thermal radiation control. Component matching. System analysis and design.

Prerequisites: Engineering 91.241★ and Third-year registration.

Lectures three hours a week.

Engineering 88.451★

State Space Modeling and Control Techniques

State space (or "modern") modeling and control techniques: Review of matrices; The geometric structure and dynamics of linear systems, primarily single-input-single-output (SISO); Controllability and observability; Pole placement design of both controllers and observers; Regulator and servo design. Introduction to output feedback problems, transmission zeros, singular value decompositions and multiple-input-multiple-output systems. Relationship to frequency or classical control techniques. The course will make extensive use of computer solutions using MATLAB.

Precludes additional credit for Engineering 94.552★.

Prerequisite: Engineering 88.352★.

Lectures three hours a week.

Engineering 88.453★

An Introduction to Robotics

Introduction to robotics with emphasis on applications. Kinematics and dynamics of robots and manipulators. Motion trajectories. Object and task description. Motion between positions. Control. Steady-state Servo errors. Steady-state velocity and acceleration errors. Applications of microprocessors for robots and manipulator control. Actuators of robots. Sensors of robots. Compliance. Programming. Robot applications in manufacturing and other industries.

Prerequisites: Mathematics 69.375★ and Engineering 94.260★/94.360★.

Lectures three hours a week.

Engineering 88.464★

Finite Element Methods

Introduction to finite element methodology with emphasis on applications to stress analysis, heat transfer and fluid flow using the simplest one- and two-dimensional elements. Direct equilibrium, variational and Galerkin formulations. Computer programs and practical applications. Higher order elements.

Prerequisites: Engineering 86.322★ and 86.333★.

Lectures three hours a week.

Engineering 88.474★

Computer-Integrated Manufacturing Systems (CIMS)

The course presents an overview of the topics essential to CIMS. These include computer graphics, geometric modelling, kinematic analysis, numerically controlled machining, robotics, and flexible manufac-

turing systems, with the objective of understanding the fundamental data structures and procedures that are appropriate to the computerization of engineering design, analysis and production.

Also offered at the graduate level, with additional or different requirements, as Engineering 88.574★, for which additional credit is precluded.

Prerequisite: Engineering 88.370★.

Lectures three hours a week.

Engineering 88.475★

CAD/CAM

Fundamentals of computer aided design (CAD): review of the design process, elements of computer graphics including hardware and software standards. Wire frames, boundary representations, constructive solids geometry, sculptured surfaces. Data bases. Graphics and product interchange files. Fundamentals of computer aided manufacturing (CAM): numerical control (NC), CNC, DNC, adaptive control. CAM programming. Introduction to popular commercial CAD programs. Management issues including acquisition, training and security.

Also offered at the graduate level, with additional or different requirements, as Engineering 88.575★, for which additional credit is precluded.

Lectures three hours a week.

Engineering 88.485★

Measurement Systems and Data Handling

Assessing experimental data, accuracy and uncertainty analysis. Analog systems and signals. Response of measuring systems. Sensors. Signal conditioning. Op-Amps, instrumentation amplifiers, charge amplifiers, filters. Digital techniques. Encoders, A/D D/A converters. Data acquisition systems using microcomputers. Hardware and software considerations. Interfacing. Applications to measurement of motion, strain, force/torque, pressure, fluid flow, temperature.

Precludes additional credit for Engineering 97.485★ (no longer offered).

Prerequisites: Mathematics 69.352★, Engineering 91.251 and★ 94.360★.

Lectures three hours a week.

Engineering 88.497

Engineering Project

As part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self-reliance, creative ability and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc. Each student is required to submit his or her engineering project proposal to the Chair of the Department of Mechanical and Aerospace Engineering on or before the last day of classes in September.

(Arts)

911A Loeb Building
Telephone: 520-5770

Academic Administration

Assistant Director
J. Giles

Supervisor of Undergraduate Studies
P. Cardy

Supervisor of Performance and Practical Studies
D. Piper

Teaching Staff

Professors
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D. Gardner
B. Gillingham
A. Gillmor
E. Keillor
J. Shepherd

Associate Professor
D. Piper

Instructor
J. Giles

Adjunct Professors
Helmuth Kallmann (*National Library of Canada*)
Peter Wicke (*Direktor, Forschungszentrum populäre Musik, Humboldt Universität*)

Research Associates
Robert Barclay (*Canadian Conservation Institute*)
Clifford Ford (*Canadian Musical Heritage Society*)
Anne-Marie Gaston
Carl Widstrand

Sessional Lecturers
M. Bussière
L. Canton
R. Frayne
A. Schau

Directors
Michael Bussière, Carleton Contemporary Music Group
Lisette Canton, Carleton Choir
Terry Duncan, Carleton Concert Band
Rob Frayne, Jazz Ensembles
Iain Phillips, Early Music Ensemble
Ann Schau, Performance Courses

Instrumental and Vocal Instructors
Peggy Atherton, Viols
Nicholas Atkinson, Tuba
Paul Bourdeau, Guitar
Jean-Guy Brault, Saxophone
Susanna Burton, Voice

Iain Clyne, Piano
Wayne Eagles, Guitar
Garry Elliot, Guitar
Lawrence Ewashko, Voice
Rob Frayne, Saxophone
Barbara Gaizauskas, Recorder
Don Gress, French Horn
Jay Harrison, Euphonium
Drummond Hudson, Trombone
Don Johnson, Percussion
Elaine Keillor, Piano
Lorne Kelly, Drum Set
Manon LeComte, Harp
Joan Milkson, Violin/Viola
Veronica Milroy, Oboe
Tom Moyer, Trumpet
Gloria Jean Nagy, Voice
Dina Namer, Harpsichord, Piano
Michael Namer, Bassoon
Jordan O'Connor, Electric Bass
Tena Palmer, Voice
Iain Phillips, Early Instruments
D. Piper, Organ
Catherine Rollins, Flute
Stephen Rollins, Guitar
Laurie Rosewarne, Accordion
Barbara Ross, Voice
Bill Rowat, Trumpet
Ann Schau, Piano
John Seck, Guitar
Ken Simpson, Percussion
Joy Skrapek, Clarinet
Charlotte Stewart, Voice
Wesley Warren, Organ
Donald Whittton, Cello

General Information

The purpose of the programs offered by the Discipline of Music is to promote an intellectual, aesthetic and emotional understanding of music as an expression of human cultural activity. All students will be encouraged to examine the meanings and motivations of the art and to develop their speculative and critical responses to it in both historical and contemporary contexts. Stated briefly, the Discipline wishes to offer flexibility of choice and emphasis in programs that foster a basic grasp of the nature of musical processes from historical, social, practical and artistic points of view.

In addition to its undergraduate programs, the Discipline offers courses at the graduate level in the history of Canadian music in co-operation with the School of Canadian Studies.

The Discipline also sponsors a variety of performing groups including the *Carleton Choir*, *Early Music Ensemble*, *Carleton Concert Band*, and *The Contemporary Music Group*, and the *Jazz Ensembles*, all of which are open to Carleton students and members of the community.

Courses Requiring No Previous Music Theory or Music Performance

Although serving Music's programs, all courses offered by Music other than performance courses (which are identified in the Calendar as being open only to B.Mus. students) can be taken as options by students registered in programs elsewhere in the University. A substantial number of the courses that can be taken as options require no previous music theory or music performance. Courses requiring no previous music theory or music performance are as follows: 30.100, 30.115, 30.200★, 30.201★, 30.202★, 30.203★, 30.204★, 30.205★, 30.206★, 30.207★, 30.208★, 30.209★, 30.300, 30.310, 30.312★, 30.331★, 30.332★, 30.340★, 30.341★, 30.400★, 30.410★, 30.433★, 30.498. Special topics (30.420★ to 30.424★) and specialized studies courses (30.425★ to 30.429★) may or may not be offered in any year and may or may not require previous music theory or music performance. Students are advised to consult Music each year regarding these courses.

Graduation Regulations

In order to graduate, students must fulfill all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all Discipline regulations and requirements as set out below.

Pass Program (B.A.)

The three-year B.A. program in Music requires 15.0 credits, including a minimum of 7.0 credits in Music as follows:

1. Music 30.100, normally to be taken in First year;
2. 1.5 credits from Music 30.200★, 30.201★, 30.202★, 30.203★, 30.204★, 30.205★, 30.206★, 30.207★, 30.208★ and 30.209★;
3. 1.5 additional credits at the 200-level;
4. Music 30.300;
5. 1.0 additional credit at the 300-level;
6. 1.0 additional credit in Music.

Performance courses may not be taken in this program. Students transferring into and continuing in the B.A. Pass (Music) program must have achieved and must maintain a GPA of 4.0 in the required Music credits and a CI of 4.00 in order to remain in good standing in the program. The Music GPA and the Music Graduate Average will be calculated on only the required Music credits in the program; Music credits counted as Options in the program will not be included in the calculation.

Combined Pass Program (B.A.)

Combined Pass programs may be arranged with

other departments and disciplines in the Faculties of Arts or Social Sciences. Both departments or disciplines must approve a Combined Pass program.

The three-year B.A. program in Music combined with another subject requires 15.0 credits, including a minimum of 5.0 credits in Music as follows:

1. Music 30.100, normally to be taken in First year;
2. 2.0 credits at the 200-level;
3. 1.0 credit in Music at the 300-level or above.
4. 1.0 additional credit in Music.

Performance courses may not be taken in this program. Students transferring into and continuing in the B.A. Pass (Music combined with another discipline) program must have achieved and must maintain a GPA of 4.0 in the required Music credits and a CI of 4.00 in order to remain in good standing in the program. The Music GPA and the Music Graduation Average will be calculated on only the required Music credits in the program; Music credits counted as Options in the program will not be included in the calculation.

Honours in Music Program (B.Mus.)

Each prospective student should have an appreciable background in practical music-making and *must* consult the Discipline of Music for advice before entering the program.

Admission to the B.Mus. program is by audition. Auditions will be scheduled beginning in March of the academic year preceding entry to the program. Applicants who reside more than 100 km from Ottawa can audition by means of a tape with an affidavit. Prospective students can audition in any classical, folk, traditional or popular idiom. The applicant is expected to display technical competence in an instrument or voice. Full details of what is expected in the audition are available from the Music Discipline Office of the School.

The four-year B.Mus. program requires 20.0 credits (plus 4.0 0.0 credit value courses in Instrumental Ensemble and 4.0 0.0 credit value courses in Choral Ensemble). The music requirements in the program consist of a minimum of 13.0 credits in Music (plus the Instrumental and Choral Ensemble courses). The program requirements are:

1. Music 30.100, normally to be taken in First year;
2. Music 30.170, normally to be taken in First year;
3. Music 30.190★, normally to be taken in the First year;
4. Music 30.192★ and 30.193★, normally to be taken in First year;

On attaining Second-year standing and on completion of the above Music requirements:

5. Music 30.270★, 30.271★ and 30.272★, normally to be taken in the Second year;
6. Music 30.290★, normally to be taken in the Second year;
7. Music 30.292★ and 30.293★, normally to be taken in the Second year;

8. 1.5 credits from Music 30.200★, 30.201★, 30.202★, 30.203★, 30.204★, 30.205★, 30.206★, 30.207★, 30.208★ and 30.209★, with at least 0.5 credit from 30.200★, 30.201★, 30.202★, 30.203★ and 30.204★, and at least 0.5 credit from 30.205★, 30.206★, 30.207★, 30.208★ and 30.209★, normally to be completed by the end of the Third year;

9. 1.0 additional credit in Music at the 200-level, normally to be completed by the end of the Third year;

10. Music 30.300, normally to be taken in the Third year;

11. Music 370★, normally to be taken in the Third year;

12. Music 30.390★, normally to be taken in the Third year;

13. Music 30.392★ and 30.393★, normally to be taken in the Third year;

14. 1.5 additional credits in Music at the 300-level;

15. Music 30.490★ (Note: For students who take 30.497 to satisfy 17. below, a 0.5 credit in Music at the 400-level must be taken in lieu of 30.490★);

16. Music 30.492★ and 30.493★, normally to be taken in the Fourth year;

17. 2.0 additional credits in Music at the 400-level;

18. 1.0 credit, or equivalent, in a language other than English (Note: students contemplating graduate study are strongly advised to develop further their language skills);

19. At least 5.0 credits (including 18. above) in a discipline or disciplines other than Music.

Students who obtain a grade of *FNS* in 30.190★, 30.290★, 30.390★, 30.490★ or 30.497★, or a grade of *Uns* in 30.192★, 30.193★, 30.292★, 30.293★, 30.392★, 30.393★, 30.492★ or 30.493★ will be removed from the B.Mus. program. Students transferring into and continuing in the B.Mus. program with First-, Second- or Third-year standing must have achieved a GPA of 6.0 in the required Music credits and a CI of 6.00. Students beginning the final 5.0 credits towards the B.Mus degree must have achieved a GPA of 6.5 in the required Music credits and a CI of 6.00. To be eligible to graduate, B.Mus. students must have a Graduation Average of 6.5 in the required Music credits and a CI of 6.00. The Music GPA and the Music Graduation Average will be calculated only on the successfully completed graded courses counting towards the required Music credits in the program; Music credits counted as options in the program and courses graded *Sat/Uns* will not be included in the calculation. Courses graded *Sat/Uns* will also not be counted as attempts and will not be used in the calculation of the CI.

Honours in Music Program (B.A. Hons.)

Each prospective student *must* consult the Discipline of Music for advice before entering the program.

The four-year B.A. Honours program requires 20.0 credits, including a minimum of 11.0 credits in Music as follows:

1. Music 30.100, normally to be taken in First year;
2. 1.5 credits from Music 30.200★, 30.201★, 30.202★, 30.203★, 30.204★, 30.205★, 30.206★,

30.207★, 30.208★ and 30.209★, with at least 0.5 credit from 30.200★, 30.201★, 30.202★, 30.203★ and 30.204★ and at least 0.5 credit from 30.205★, 30.206★, 30.207★, 30.208★ and 30.209★;

3. 2.5 additional credits in Music at the 200-level;

4. Music 30.300;

5. 2.0 additional credits in Music at the 300-level;

6. 2.0 credits in Music at the 400-level;

7. 1.0 additional credit in Music.

B.A. Honours students are also required to take:

8. 1.0 credit, or equivalent, in a language other than English. (Note: students contemplating graduate study are strongly advised to develop further their language skills);

9. At least 5.0 credits (including 1. above) in a discipline or disciplines other than Music.

Note:

Performance courses may not be taken in this program.

Students transferring into and continuing in the B.A. Honours program with First-, Second- or Third-year standing must have achieved a GPA of 6.0 in the required Music credits and a CI of 6.00. Students beginning the final 5.0 credits towards the B.A. Honours degree must have achieved a GPA of 6.5 in the required Music credits and a CI of 6.00. To be eligible to graduate B.A. Honours students must have achieved a GPA of 6.5 in the required Music credits and a CI of 6.00. The Music GPA and the Music Graduation Average will be calculated on only the required Music credits in the program; Music credits counted as Options in the program will not be included in the calculation.

Combined Honours Program (B.A. Hons.)

Each prospective student *must* consult the department or school of each discipline for advice before entering the Combined Honours program.

The four-year B.A. Honours program in Music combined with another subject requires 20.0 credits, including a minimum of 7.0 credits in Music as follows:

1. Music 30.100, normally to be taken in First year;
2. 2.0 credits in Music at the 200-level;
3. 2.0 credits in Music at the 300-level;
4. 1.0 credit in Music at the 400-level;
5. 1.0 additional credit in Music.

Performance courses may not be taken in this program.

Students transferring into and continuing in the B.A. Honours program with First-, Second- or Third-year standing must have achieved a GPA of 6.0 in the required Music credits and a CI of 6.00. Students beginning the final 5.0 credits towards the B.A. Combined Honours degree must have achieved a GPA of 6.5 in the required Music credits and a CI of 6.00. To be eligible to graduate, B.A. Combined Honours students must have achieved a GPA of 6.5 in the re-

quired Music credits and a CI of 6.00. The Music GPA and the Music Graduation average will be calculated on only the required Music credits in the program; Music credits counted as Options in the program will not be included in the calculation.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

The majority of courses are open to non-Majors; students are advised to consult the Discipline.

Music 30.100

Introduction to World Music

A survey of world music, including popular musics, folk and traditional musics, music in Asian high cultures and Western high-culture music.

Lectures three hours a week.

Music 30.115

Elementary Materials of Music

A guided self-directed seminar in the rudiments of music theory and ear training. Successful completion of this course will fulfil any prerequisite for entry into Music 30.170. This course carries no credit for B.Mus. students, but is acceptable as an option Music credit for the B.A. (Honours) and B.A. (Pass) degree. It is specially recommended for those who, contemplating entry into a Music degree program, do not have a strong background in theory.

Prerequisites: Music majors only; or high school students registered in their final year of OAC credits, and permission of the Discipline.

Seminar two hours a week.

Music 30.170

An Introduction to Theoretical Studies

An introduction to tonal thinking, with emphasis on the development of musicianship skills.

Precludes additional credit for Music 30.150★ and 30.151★ (both no longer offered).

Prerequisite: Permission of the Discipline.

Lectures and seminars five hours a week.

Music 30.190★

Performance I

Vocal or instrumental instruction for B.Mus. students only. Instruction is offered in high-culture, traditional and popular idioms. A brief prepared recital before a jury of faculty members is required at the end of the year. Registration is restricted to students in the B.Mus. program only. Students who transfer from the B.Mus. program to a B.A. program cannot transfer credit for this course.

Prerequisite: Audition.

Individual tuition twenty hours a year.

Music 30.191★

Class Piano

Tuition offered on a group basis for keyboard (subject to sufficient enrollment) to obtain basic playing and reading skills. Registration in this course is restricted to students in the B.Mus. program only. This course carries no credit for the B.A. Honours and B.A. Pass degrees.

Precludes additional credit for Music 30.195★ (no longer offered).

Prerequisite: Permission of the Discipline.

Group instruction twenty hours a year.

Music 30.192★

Instrumental Ensemble I

Participation in an instrumental ensemble, by arrangement with the Supervisor of Performance and Practical Studies. Registration is restricted to students in the B. Mus. program. Music 30.192★ (as well as all the other instrumental ensemble courses: 30.292★, 30.392★ and 30.492★) is a required course in the B.Mus. program with a 0.0 credit value. Grades for the courses are *Sat* (satisfactory) or *Uns* (unsatisfactory).

Prerequisite: First-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

Music 30.193★

Choral Ensemble I

Participation in a choral ensemble, by arrangement with the Supervisor of Performance and Practical Studies. Registration is restricted to students in the B.Mus. program. Music 30.193★ as well as all the other choral ensemble courses (30.293★, 30.393★, 30.493★) is a required course in the B.Mus. program with a 0.0 credit value. Grades for the course are *Sat* (satisfactory) or *Uns* (unsatisfactory).

Prerequisite: First-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

Music 30.200★

Music in the Middle Ages

A survey of music in its courtly, national and ecclesiastical contexts from 350 until 1450, including the study of secular monophony, medieval polyphony and liturgical music.

Precludes additional credit for Music 30.210★ (no longer offered).

Prerequisite: Second-year standing.

Lectures three hours a week.

Music 30.201★

Music in the Renaissance and Baroque Eras

A survey of European music and its milieu from the high Renaissance to the late Baroque (approximately 1450-1750). Major genres (chanson, motet, madrigal, concerted music, chamber music, keyboard music, and large vocal works) by important composers from Josquin to Bach will be the main focus of study. Precludes additional credit for Music 30.211★ and 30.212★ (both no longer offered).

Prerequisite: Second-year standing.

Lectures three hours a week.

Music 30.202★

Music in the Classical and Romantic Eras

A survey of European music from the early eighteenth century to the end of the Romantic era. This evolution of the Classical and Romantic styles is traced in the important works of composers from the Viennese school of Haydn, Mozart and Beethoven to the late Romantics Wagner and Mahler. Important genres as well as individual and national styles are examined in

the context of the socio-political climate of the period circa 1720 to circa 1910.

Precludes additional credit for Music 30.213★, 30.214★ (both no longer offered).

Prerequisite: Second-year standing.

Lectures three hours a week.

Music 30.203★

Twentieth-Century Music to World War II

A survey of European high-culture music from 1890 to circa 1945. Idioms to be examined in the socio-political climate of the period include Debussyan impressionism, Viennese expressionism, nationalism and Stravinskian neoclassicism.

Precludes additional credit for Music 30.215★ (no longer offered).

Prerequisite: Second-year standing.

Lectures three hours a week.

Music 30.204★

Music Since World War II

A study of selected aspects of the musical avant-garde in the Western classical tradition in the socio-political climate of the post-War period. Aspects to be examined include serialism, colouristic and textural composition, music of political commitment, electronic music, musical theatre, process music and the music of chance.

Precludes additional credit for Music 30.216★ (no longer offered).

Prerequisite: Second-year standing.

Lectures three hours a week.

Music 30.205★

Ragtime and Jazz

A survey of ragtime and jazz from their roots in pre-twentieth-century black music and white music to contemporary jazz idioms, including an examination of New Orleans jazz, and Dixieland, swing, bebop, cool jazz and free jazz.

Precludes additional credit for Music 30.225★ (no longer offered).

Prerequisite: Second-year standing.

Lectures three hours a week.

Music 30.206★

Popular Musics before 1945

An examination of selected aspects of the development of Anglo-American popular musics from their roots in the nineteenth century until the shifts and tensions which led to the advent of rock 'n' roll and soul in the 1950s. Genres to be examined include blues, country, the sentimental ballad, and Broadway and film music.

Precludes additional credit for Music 30.223★, 30.226★ and 30.228★ (all courses no longer offered).

Prerequisite: Second-year standing.

Lectures three hours a week.

Music 30.207★

Popular Musics after 1945

An examination of selected aspects of the development of Anglo-American and world popular musics from the advent of rock 'n' roll and soul to the present. Genres to be examined include early rock 'n' roll, British rhythm'n'blues, Motown, West Coast music, punk, heavy metal, new wave, disco and country. Precludes additional credit for Music 30.227★,

30.228★, and 30.229★ (all courses no longer offered).

Prerequisite: Second-year standing.

Lectures three hours a week.

Music 30.208★

An Introduction to Ethnomusicology

The basic techniques in ethnomusicology are introduced and illustrated through case studies of the folk and tribal musics of Europe, Asia, Africa, Australia and Oceania, North and South America.

Precludes additional credit for Music 30.230★ (no longer offered).

Prerequisite: Second-year standing.

Lectures three hours a week.

Music 30.209★

Music of the Asian High Cultures

A comparative and analytical study of music in Asian high cultures, including India, China, Korea, Indonesia, Japan, and the Arabic world, through an examination of the music, musical instruments and theoretical systems.

Precludes additional credit for Music 30.231★ (no longer offered).

Prerequisite: Second-year standing.

Lectures three hours a week.

Music 30.260

Composition I

An introductory course designed to enable students to develop abilities in the writing of original music. The study and application of modern and contemporary styles and techniques are emphasized.

Prerequisite: Music 30.170 or permission of the Discipline.

Lectures and seminars three hours a week.

Music 30.265★

Choral Conducting

A course designed to introduce students to the special stylistic features of choral music from the Renaissance to the present as well as to a variety of practical techniques (vocal production, gesture, conducting patterns, diction, etc.). The course includes a survey of choral literature as well as practical experience in conducting techniques.

Lectures three hours a week.

Music 30.270★

Theoretical Studies: Common Practice

A study of the harmonic, melodic, rhythmic and formal structures of music of the common practice period, with emphasis on the development of written musical skills.

Precludes additional credit for Music 30.250★ (no longer offered).

Prerequisite: Music 30.170 or permission of the Discipline.

Lectures two hours a week throughout the year.

Music 30.271★

Theoretical Studies: Popular Music Practice

A study of the rhythmic, melodic, harmonic and formal structures of popular musics.

Prerequisite: Music 30.170 or permission of the Discipline.

Lectures two hours a week throughout the year.

Music 30.272★

Theoretical Studies: Aural Training

A practical study of music as an aural phenomenon. Hearing skills and aural concentration are developed through recall, reproduction, aural analysis and transcription. Sound materials are drawn from a wide range of sources, live and recorded.

Precludes additional credit for Music 30.251★ (no longer offered).

Prerequisite: Music 30.170 or permission of the Discipline.

Seminars three-and-a-half hours a week throughout the year.

Music 30.273★

Theoretical Studies: Practical Skills

This course is designed to give a practical study of rhythm, harmony and melody on the keyboard. The emphasis will be on vocal and instrumental accompaniment and the development of improvisation skills in a variety of styles.

Precludes additional credit for Music 30.152★ (no longer offered).

Prerequisites: Music 30.170 or equivalent and permission of the Discipline.

Seminars one and one-half hours a week throughout the year.

Music 30.290★

Performance II

A continuation of Music 30.190★ for B.Mus. students only. A brief prepared recital before a jury of faculty members is required at the end of the year. Registration is restricted to students in the B.Mus. program only. Students who transfer from the B.Mus. program to a B.A. program cannot transfer credit for this course.

Prerequisite: Second-year standing, Music 30.190★ or permission of the Discipline.

Individual tuition twenty hours a year.

Music 30.292★

Instrumental Ensemble II

Instrumental ensemble, a continuation of 30.192★.

Prerequisite: Second-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

Music 30.293★

Choral Ensemble II

Choral ensemble, a continuation of 30.193★.

Prerequisite: Second-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

Music 30.300

Approaches to the Study of Music

This course surveys the development of historical musicology, ethnomusicology, popular music studies, music theory, music analysis and music criticism as distinct sub disciplines and considers the range of theories and methods they provide for the study of music. The course considers established approaches as well as more recent developments deriving from various forms of cultural theory and feminism.

Precludes additional credit for Music 30.321★,

30.322★, 30.471★ and 30.472★ (no longer offered). Prerequisites: Music 30.100 and permission of the Discipline.

Seminars three hours a week.

Music 30.310

Music in Canada

A survey of musics in Canada from the earliest historical records to the present day. Topics include: the sacred and secular music of New France; the cultivated and vernacular traditions after 1760; Mathieu and Willan; new trends circa 1940; electro-acoustic music; Schafer and the contemporary soundscape; and popular music in Canada.

Lectures three hours a week.

Music 30.312★

Music in the United States in the Twentieth Century

A survey of contemporary American music. Topics include: Ives and the experimental tradition; Copland; Thomson; Harris and the American nationalists; the neoromantics; Gershwin and the third stream; and post-1945 developments in indeterminacy and minimalism.

Precludes additional credit for Music 30.312 (if taken before 1986-87).

Lectures three hours a week.

Music 30.331★

The Production and Consumption of Music

This course considers as historical and social phenomena the ways in which music is mediated and supported through social institutions, technologies, and financial and legal arrangements. Topics to be covered include changing patterns of patronage during the eighteenth and nineteenth centuries as well as the advent and development of the modern music industries.

Precludes additional credit for Music 30.321★ (no longer offered).

Seminars three hours a week.

Music 30.332★

Music and Gender I

This course explores the role of gender in the theory and practice of music in western and non-western cultures. Attention is directed to women's participation in music to make good their absence from traditional accounts in music's history, significance and development.

Lecture three hours a week.

Music 30.340★

A History of Opera before 1800

A survey of the development of opera from the beginnings to about 1800. The course deals with the major monuments of Italian, French, German and English opera, by such composers as Monteverdi, Cavalli, Scarlatti, Purcell, Lully, Gluck, Rameau, Mozart and Haydn.

Lectures three hours a week.

Music 30.341★

A History of Opera from 1800 to 1945

A study of romantic and contemporary opera through an examination of selected works from Weber's *Der Freischütz* to Britten's *Peter Grimes*, including an investigation of national styles from Wagnerian music

drama and Italian verismo to Russian realism and German expressionism.

Lectures three hours a week.

Music 30.360

Composition II

In part a continuation of Music 30.260, but more emphasis is placed on developing the student's own creative personality.

Prerequisite: Music 30.260 or permission of the Discipline.

Seminars two hours a week.

Music 30.361

Orchestration

A study of the instruments of the orchestra, their historical background, ranges and technical abilities, with emphasis on the development of practical written skills in orchestrating works for a variety of small and large ensembles.

Prerequisite: Music 30.270★ or permission of the Discipline.

Lectures three hours a week.

Music 30.363★

Computer Music Techniques

An introduction to the techniques of sound synthesis primarily through practical experience at the digital synthesizer and computer. This course includes the basics of machine operations, software and computer applications to composition and synthesis. Enrollment in this course is limited.

Prerequisite: Second-year standing.

Lectures three hours a week, plus individual studio time.

Music 30.364★

Computer Music Projects

A continuation of Music 30.363★. The various applications of digital equipment are examined through the realization of original projects. Students may focus on studio composition, software development or analytic research. Appropriate compositional techniques and problem solving strategies are also discussed. Enrollment in this course is limited.

Prerequisite: Music 30.363★ or Second-year standing.

Lectures three hours a week, plus individual studio time.

Music 30.370★

Theoretical Studies: Advanced and Post Common Practice

A study of the structures and styles of music of the late and post common practice period, with emphasis on the development of written musical skills.

Precludes additional credit for Music 30.350★ or 30.350 (if taken before 1987-88).

Prerequisite: Music 30.270★ or permission of the Discipline.

Lectures three hours a week.

Music 30.371★

Jazz Styles and Structures: Analysis and Practice

This course studies the development of jazz styles from ragtime to fusion and involves both theory and practice. It has three components: style and structure analysis, where forms and structures will be studied; ear training, where exercises for aural recognition

and response will accompany analysis; and improvisation, where exercises and pieces will be played on instruments of students' choosing.

Precludes additional credit for Music 30.424★ (no longer offered).

Prerequisite: Music 30.271★ or permission of the Discipline.

Lectures three hours a week.

Music 30.373★

Theoretical Studies: Advanced Practical Skills

The practical use of the keyboard in different music situations will be developed according to the individual needs of advanced students. These areas may include vocal and instrumental accompaniment, the reading of scores and charts, transposition, advanced improvisation, and figured bass.

Precludes additional credit for Music 30.252★ (no longer offered).

Prerequisite: Music 30.273★ or equivalent or permission of the Discipline.

Seminars one and one-half hours a week throughout the year.

Music 30.375★

Theoretical Studies: Sixteenth-Century Counterpoint

A study of the polyphonic techniques of vocal writing in the sacred music of the sixteenth century. The emphasis is on the acquisition of writing skills.

Precludes additional credit for Music 30.353★ (no longer offered).

Prerequisites: Music 30.201★ and 30.270★.

Lectures two hours a week throughout the year.

Music 30.376★

Theoretical Studies: Tonal Counterpoint

A study of the forms and techniques of contrapuntal writing during the common practice period. The purpose of the course is the development of writing skills.

Precludes additional credit for Music 30.354★ (no longer offered).

Prerequisites: Music 30.201★ or 30.202★, and 30.270★.

Lectures two hours a week throughout the year.

Music 30.380★

Analytical Studies: Works

A study of the style and structure of selected works from the Middle Ages to the present. The object of the course is to pinpoint key components of the musical processes represented while at the same time developing and applying techniques of musical analysis.

Precludes additional credit for Music 30.355★ and 30.356★ (both no longer offered).

Prerequisite: Music 30.170.

Lectures and seminars three hours a week.

Music 30.381★

Analytical Studies: Theoretical Approaches

The course will explore important methods of musical analysis as outlined in the theoretical literature from the eighteenth century to the present. Some of the major approaches to be considered are: rhetoric and music, phrasal/formal analysis, harmonic reductionism (including Schenker), Gestalt patterning, organic growth, compositional unfolding, layer theory, graphic analysis, cybernetics, set theory and

semiotics.

Precludes additional credit for Music 30.355★, 30.356★ and 30.357★ (no longer offered).

Prerequisite: Music 30.380★.

Lectures and seminars three hours a week.

Music 30.390★

Performance III

A continuation of Music 30.290★ for B.Mus. students only. A brief prepared recital before a jury of faculty members is required at the end of the year. Registration in this course is restricted to B.Mus. students only. Students who transfer from the B.Mus. program to a B.A. program cannot transfer credit for this course.

Prerequisite: Third-year standing, Music 30.290★ or permission of the Discipline.

Individual tuition twenty hours a year.

Music 30.392★

Instrumental Ensemble III

Instrumental ensemble, a continuation of 30.292★.

Prerequisite: Third-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

Music 30.393★

Choral Ensemble III

Choral ensemble, a continuation of 30.293★.

Prerequisite: Third-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

Music 30.400★

Theory in Musicology

An advanced seminar in contemporary theoretical and methodological issues raised in historical musicology, ethnomusicology and popular music studies. Precludes additional credit for Music 30.472★ (no longer offered).

Prerequisites: Music 30.300 and permission of the Discipline.

Seminars three hours a week.

Music 30.410★

National Identities in Music

An advanced seminar which considers the problem of national identities in music with special attention to Canada and the United States.

Prerequisite: Fourth-year standing, or permission of the Discipline.

Seminars three hours a week.

Music 30.419

Specialized Studies

A course designed for Music Honours students who have acquired an extensive background through courses in theory, musicology or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.420★ to 30.424★

Special Topics

Courses focusing on one selected aspect of music, in the area of either musicology, theory or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.423★

Instrumental Conducting

This course is designed to introduce students to instrumental conducting for ensembles and orchestra. The course includes a research component in orchestral literature as well as practical experience in conducting techniques.

Prerequisite: Second-year standing or permission of the Discipline.

Seminar three hours a week.

Music 30.425★ to 30.428★

Specialized Studies

Courses designed for Music Honours students who have acquired an extensive background through courses in theory, musicology or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.429

Specialized Studies

A course designed for Music Honours students who have acquired an extensive background through courses in theory, musicology or composition. The course offerings change from year to year.

Prerequisite: Permission of the Discipline.

Music 30.430★

Notation of Medieval and Renaissance Music

An introduction to the notation of medieval and renaissance music with emphasis on the major paleographic and transcriptional problems to be encountered in early chant notation, square and Franconian notations, the innovations of the Ars Nova and mannerist phases, white notation, and various lute tablatures. Examples are selected, for detailed study and transcription, from the ninth to sixteenth centuries.

Prerequisite: Music 30.200★ or permission of the Discipline.

Lectures three hours a week.

Music 30.431★

Twentieth-Century Musical Notation

A seminar in twentieth-century notation, considering the modification of existing systems to accommodate new compositional and performance practices and the development of new systems. Topics discussed include the psychology of notation, information theory in music, classification systems, graphic notation, indeterminate scores and calligraphic techniques.

Prerequisite: Music 30.204★ or permission of the Discipline.

Lectures three hours a week.

Music 30.433★

Music and Gender II

This course explores the relationship between the social and formal organization of music and the social and formal organization of gender difference. A principal focus of the course is to understand the role of music in the social construction of gender as well as the role of gender in the determination of musical style and taste.

Precludes additional credit for Music 30.333★ and 30.424★ (both no longer offered).

Prerequisite: Music 30.332★ or permission of the Discipline.

Seminar three hours a week.

Music 30.460**Composition III**

A continuation of Music 30.360 for students who possess a displayed aptitude for composition. The course centres around the writing of original works of substantial proportions and for a variety of media. Students are encouraged to prepare some of their music for public performance.

Precludes additional credit for Music 30.496.

Prerequisite: Music 30.360 or permission of the Discipline.

Seminars one hour a week.

Music 30.470★**Advanced Theoretical Studies**

A study of selected topics in music theory.

Prerequisite: Music 30.370★ or permission of the Discipline.

Seminars three hours a week.

Music 30.471★**Jazz Styles and Structures: Arranging and Composition**

This course is a continuation of Music 30.371★. Techniques of arranging and composition for small and large ensemble will be studied through examination of selected works drawn from the jazz repertoire. There will be an emphasis on practical written skills and students will be encouraged to prepare both standard and original works for public performance.

Prerequisite: Music 30.371★ or permission of the Discipline.

Seminars three hours a week

Music 30.473★**Performance Practice**

A seminar to examine how music in earlier periods of the Western tradition was performed, the "authentic" movement of the twentieth century, and the boundaries within which compositions of Asian high cultures and jazz and popular music standards can be realized.

Prerequisite: Permission of the Discipline.

Seminars three hours a week.

Music 30.477★**History of Music Theory**

Case studies drawn from a wide range of theoretical writings from the ancient world to the present provide the core of this seminar. The course is designed in such a way as to allow for the exploration of particular interests of individual students, while at the same time providing a broader overview of the history of music theory.

Prerequisite: Permission of the Discipline.

Seminars three hours a week.

Music 30.490★**Performance IV**

A continuation of Music 30.390★ for B.Mus. students only. A brief prepared recital before a jury of faculty members is required at the end of the year. Registration is restricted to students in the B.Mus. program only. Students who transfer from the B.Mus. program to a B.A. program cannot transfer credit for this course.

This course *may not* be taken in addition to or concurrently with Music 30.497.

Prerequisite: Fourth-year standing, Music 30.390★ or permission of the Discipline.

Individual tuition twenty hours a year.

Music 30.492★**Instrumental Ensemble IV**

Instrumental ensemble, a continuation of 30.392★.

Prerequisite: Fourth-year standing in the B.Mus. program or permission of the Discipline.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

Music 30.493★**Choral Ensemble IV**

Choral ensemble, a continuation of 30.393★.

Prerequisite: Fourth-year standing in the B.Mus. program.

Ensemble work approximately two hours a week throughout the year and participation in concerts.

Music 30.496**Honours Portfolio in Composition**

A project involving the composition and written analysis (of approximately 20 pages) of an original work of substantial length, prepared in consultation with the Discipline and an assigned adviser. This course is recommended for B.Mus. students wishing to undertake intensive study in composition. This course will be double-weighted in the calculation of the Music GPA.

Precludes additional credit for Music 30.460.

Prerequisite: Permission of the Discipline.

Music 30.497**Graduating Recital**

Recommended for B.Mus. students intending to continue performance studies. The course requires preparation of a public performance of at least one hour duration arranged in consultation with Director of Performance Studies and teacher.

This course will be double-weighted in the calculation of the Music GPA average. This course may not be taken in addition to or concurrently with Music 30.490★.

Prerequisites: Fourth-year standing and permission of the Discipline.

Individual tuition twenty hours a year.

Music 30.498**Honours Essay in Musicology**

An Honours research essay of approximately 50 pages in length on a topic chosen in consultation with the Discipline and an assigned supervisor.

This course will be double-weighted in the calculation of the Music GPA.

Prerequisite: Permission of the Discipline.

Music 30.501★, 30.505★, 30.510, 30.511★, 30.512★, 30.515★

Graduate Studies in Music

See *Graduate Studies and Research Calendar*.

(Arts)

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Academic Administration

Chair
John W. Leyden

Supervisor of Graduate Studies
Marvin Glass

Supervisor of Honours Studies
Diane E. Dubrule

Supervisor of Pass Studies
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Professor Emeritus
James C.S. Wernham

Professor
J. Andrew Brook

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Randal R.A. Marlin
Stephen Talmage
James M. Thompson
Julian Wolfe

Assistant Professors
Diane E. Dubrule
Robert J.H. Stainton

Adjunct Research Professor
Howard W. Duncan

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Courses Open to First-Year Students

The following courses are open to First-year stu-

dents: Philosophy 32.110, 32.150, 32.160 (full credits); 32.101★, 32.102★, 32.103★, 32.107★, 32.151★, 32.184★, 32.201★, 32.203★ (half-credits). Please note that not all of these courses are offered each year. No more than 2.0 credits at the 100-level may be used to satisfy requirements for graduation in any degree program.

Pass Program

Students in the Pass program in Philosophy will present a minimum of 6.0 credits in Philosophy including 5.0 credits beyond the 100-level.

These credits must be chosen to include 1.0 credit in History of Philosophy. History of Philosophy courses are: 32.205, 32.215, 32.220, 32.225, 32.270, 32.286★, 32.287★, 32.305, 32.306★, 32.310 and 32.380.

Special arrangements will be made for students proposing a Combined Pass program. The normal requirement in Philosophy is 5.0 credits, including 4.0 credits beyond the 100-level.

All Pass and Combined Pass program students will arrange their programs in consultation with the Department.

Honours Program

The Honours program may be entered at the beginning of the First year or by transfer from the Pass program. Students intending to enter the Honours program are advised to include 1.0 credit in Philosophy at the 100-level in the First-year program. In certain circumstances this requirement will be waived for students entering the Honours or Combined Honours program after the First year, who may be permitted to substitute an upper-year credit in Philosophy.

The Honours program consists of a minimum of 20.0 credits, with at least 9.0 credits in Philosophy. A minimum of 8.0 credits in Philosophy must be beyond the 100-level. The program for the Second and subsequent years is planned in consultation with the Department. The department strongly recommends that the logic requirement be satisfied as early as possible in the student's program of studies. Courses must be chosen according to the following requirements:

1. 2.0 credits in history of philosophy;
2. 2.0 credits in problems in philosophy;
3. 1.0 credit in moral and/or political philosophy;
4. Either 1.0 credit in Logic or 0.5 credit in Logic and another 0.5 credit in Philosophy;
5. 2.0 credits at the 400- or 500-level.

Courses falling within the foregoing groups are:

History of philosophy: 32.205, 32.215, 32.220, 32.225, 32.270, 32.286★, 32.287★, 32.305, 32.306★, 32.310, 32.380;

Problems in philosophy: 32.200, 32.237★, 32.245★,

32.251★, 32.252★, 32.260, 32.280, 32.284★, 32.290, 32.311★, 32.312★, 32.332★, 32.340, 32.351★, 32.366★;

Moral and/or political philosophy: 32.202, 32.211★, 32.212★, 32.236★, 32.266★, 32.330;

Logic: 32.201★, 32.336★.

Combined Honours Programs

In Combined Honours programs the Philosophy requirements are 7.0 credits, to include 6.0 credits beyond the 100-level of which 1.0 credit must be at the 400- or 500-level. Combined Honours programs are available in Philosophy with the following subjects: Art History, Biology, Economics, English, French, Greek, German, History, Journalism, Law, Linguistics, Mathematics, Political Science, Psychology, Religion, Sociology-Anthropology and Women's Studies. Details of the specific requirements for these programs may be obtained from the Department. Special arrangements may be made for other combinations. Students proposing other combinations must consult the Honours Adviser.

"Mention: français"

Students in the Pass or Honours program in Philosophy may qualify for the notation "Mention: français" (p. 55) by fulfilling the requirements outlined. Those wishing to pursue this path should consult with the Department's Pass or Honours adviser. Approval of the relevant adviser is required for all courses under the "Mention: français."

Philosophy courses presented in fulfillment of the "Mention: français" requirements can double as courses to satisfy Philosophy Pass or Honours requirements.

Pass or Combined Pass

To graduate with the notation "Mention: français", students must include in the program the following:

1. 1.0 credit in French language chosen in consultation with the Department of French for the purpose of perfecting the student's French language skills.
2. 1.0 credit from the following list of courses taught in French at Carleton and concerned with the study of the heritage and culture of French Canada: French 20.267★, 20.268★, 20.281★.
3. Either Philosophy 32.399 (Independent Study) with philosophical works read in French and papers submitted in French to be assessed by two members of the Department of Philosophy knowledgeable in the language, or 1.0 credit in Philosophy at the 300-level taught in French at another university and acceptable to the Department of Philosophy.
4. Students in Combined Pass programs must meet the "Mention: français" requirements of both disciplines.

Honours or Combined Honours

To graduate with the notation "Mention: français", students must include in their program the following:

1. same as 1 above
2. same as 2 above
3. same as 3 above
4. Either a special project (Philosophy 32.490 Tutorial) in French, supervised by a member of the Department of Philosophy or 1.0 credit earned in a Philosophy seminar or seminars at the 400-level taught in French at another university and acceptable to the Department of Philosophy. Students who choose the latter must, in addition, satisfy the Honours requirement of 2.0 Carleton credits at the 400- or 500-level in Philosophy (1.0 for Combined Honours).
5. Combined Honours students must meet the "Mention: français" requirements of both Honours disciplines.

Graduate Program

The Department of Philosophy offers studies leading to the degree of Master of Arts. For information see the *Graduate Studies and Research Calendar*, or consult the departmental Graduate Studies Supervisor.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Philosophy 32.101★

Ethics and Philosophy of Religion

An examination of arguments for and against the existence of God; the nature of religious language and the meaning and justification of moral judgments. Lectures and discussion three hours a week.

Philosophy 32.102★

Knowledge and Reality

Topics include the nature and definition of knowledge, perception and the nature of the external world, the status of necessary truths and of scientific knowledge.

Lectures and discussion three hours a week.

Philosophy 32.103★

Philosophical Texts I

An examination, both historical and critical, of selected philosophical texts. Works to be studied include Plato, *The Republic* and Descartes, *Meditations*.

Lectures and discussion three hours a week.

Philosophy 32.107★

Philosophical Texts II

An examination, both historical and critical, of selected philosophical texts. Works to be studied include Hume, *An Enquiry Concerning Human Understanding*; Ayer, *Language, Truth and Logic*.

Lectures and discussion three hours a week.

Philosophy 32.110

Looking at Philosophy

An introduction to philosophy through an examination of the following questions: What is logical thinking? Does God exist? Are values relative? Do we have responsibilities? What is a just society? Do we have free will? What is the mind? What is the nature of reality? Can we know anything for certain?

This course is not intended for Majors (Pass or Honours) in Philosophy.

Lectures and discussion three hours a week.

Philosophy 32.150

Contemporary Moral, Social and Religious Issues

A critical examination of some of the philosophical problems associated with such topical issues as feminism (e.g. marriage, the family, abortion and sexual ethics); atheism vs. theism; the meaning of life (e.g. existentialism); moral relativism vs. moral objectivism; egoistic vs. non-egoistic ethics (e.g. Ayn Rand and utilitarianism); euthanasia and capital punishment; legal paternalism (e.g. "hard" and "soft" drugs, suicide, medicare); freedom of the will.

Lectures and discussion three hours a week.

Philosophy 32.151★

Mind and Truth

An introduction to philosophy of mind and philosophy's contribution to cognitive science. Topics include: how mind is related to body; what free choice is and whether it is possible; what truth is and how philosophical truths differ from truths of psychology. Precludes additional credit for Philosophy 32.106★ (no longer offered).

Lectures and discussion three hours a week.

Philosophy 32.160

History of Philosophy

A study of the major figures and developments in philosophy from the early Greeks to the present. The approach is primarily descriptive and comparative, though an appreciation of critical reasoning is included for comprehending philosophical developments. This course is intended to provide a background from which to understand the philosophical aspects of other disciplines as well as the further study of philosophy.

Lectures and discussion three hours a week.

Philosophy 32.184★

Introduction to Environmental Ethics

An introduction to major questions in environmental ethics, including: How should human beings view their relationship to the rest of nature? Is responsible stewardship of the environment compatible with current technology? Do distinct forms of life, for example endangered species, have value? Do animals, other life-forms, ecosystems and/or the biosphere have rights? Is the right to liberty and property compatible with protecting the environment and meeting our obligations to future generations?

Lectures and discussion three hours a week.

Philosophy 32.200

Science and the Human

Topics include the scientific view of the world, scientific revolutions and the growth of knowledge and objectivity. Specific attention is paid to fundamental

concepts such as observation, explanation, causation and induction. The course concludes with an examination of the biological and social sciences.

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.201★

Introduction to Symbolic Logic

An introduction to the techniques and philosophical implications of formal logic with emphasis on the following issues: translation of expressions into symbolic form, testing for logical correctness, the formulation and application of rules of inference, and the relation between logic and language.

Open to First-year students.

Lectures and discussion three hours a week.

Philosophy 32.202

Ideas of the Individual and Society in Canada

An examination of Canadian ideas of the individual, culture and society in the context of their philosophical traditions. Emphasis is placed on the themes of nationalism; human interaction with the natural and technical environment; the individual's relation to the past, society and culture; and the ideological aspects of traditionalism, social reform and revolution. The following representatives of Canadian thinking, among others, are discussed: G. Grant, C.B. McPherson, F. Dumont.

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.203★

Informal Reasoning

A practical course to aid the student in the assessment of reasoning and the development of cogent patterns of thinking. Reference to formal logic is minimal and employed only where it will assist in clarification. A significant part of the course work is practice in criticizing examples of reasoning and in formulating one's own reasons correctly and clearly. Open to First-year students.

Precludes additional credit for Philosophy 32.120 (no longer offered).

Lectures and discussion three hours a week.

Philosophy 32.205

Greek Philosophy

An examination of early speculation in Greece, the roles of the Sophists and of Socrates, together with a study of selected topics in the works of Plato and Aristotle. (Also listed as Classical Civilization 13.240).

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.211★

History of Ethics

An examination of historical discussions of some principal questions in moral philosophy: e.g. Hobbes on egoism and obligation, Butler on conscience, Kant on moral principles, Hume or J.S. Mill on utilitarianism.

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.212★

Contemporary Ethical Theory

A critical approach to the nature of morality, the justification of moral claims and the main types of contemporary ethical theories studied through influential twentieth century writings. Topics may include: relativism and diversity in morals; justification and truth in morals; utilitarianism; deontological theories; virtue ethics; communitarianism; feminist ethics; rights.

Prerequisite: Philosophy 32.211★ or permission of the Department.

Lectures and discussion three hours a week.

Philosophy 32.215

Modern Philosophy: 1600-1800

An examination of the major philosophical writers of the seventeenth and eighteenth centuries. Selections are studied from the works of Descartes, Spinoza, Leibniz, Locke, Berkeley and Hume.

Prerequisite: A course in Philosophy or permission of the Department.

Lectures and discussion three hours a week.

Philosophy 32.220

Introduction to Marxist Philosophy

This course focuses primarily on the philosophical writings of Marx, Engels and Lenin. Materials used are intended to give the student an understanding of the Marxist world outlook as a whole, and at the same time of the Marxist approach to such special branches of philosophy as theory of history, theory of knowledge, social and political philosophy, philosophy of science and ethics. Topics such as materialism vs. idealism, dialectical vs. non-dialectical thinking, absolute vs. relative truth, freedom vs. necessity, human nature, alienation, and ideology will be discussed. Secondary source material includes the writings of both proponents and critics of Marxism.

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.225

Medieval and Renaissance Philosophy

A study of the evolution of western philosophy from the fourth century through the sixteenth century. After a brief review of Plato and Aristotle, theories of human nature, knowledge and reality are traced from the Hellenistic philosophers through the syntheses of reason with Christianity in the Middle Ages to the humanism of the Renaissance and the scepticism and fideism of the Reformation and Counter-Reformation. Several important thinkers such as Plotinus; Augustine, Thomas Aquinas, Montaigne and Francis Bacon are studied in depth.

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.236★

Philosophy and Feminism

A study of philosophical issues arising from feminism. The course includes discussions of the relations between feminism, reason and ideological commitment, as well as critical evaluation of contemporary views on selected topics (e.g. abortion, pornography and censorship, affirmative action, and beauty).

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion two and one half hours a week.

Philosophy 32.237★

Topics in Feminist Philosophy

An examination of issues such as science and gender, feminist epistemology, feminism and post modernism and feminist ethics. In connection with these issues, practical applications are given consideration.

Prerequisite: Philosophy 32.236★ or permission of the Department.

Lectures and discussion two and one half hours a week.

Philosophy 32.245★

Philosophy of the Paranormal

A philosophical examination of claims, concepts, theories and methods in parapsychology as well as astrology and other occult studies. Consideration is given to the question of their scientific character and the relation of paranormal and occult phenomena to philosophical issues such as survival of death, the immortality of the soul and human nature, time, space, causality and perception. Specific topics dealt with vary from year to year, but the following are likely to be included: telepathy, clairvoyance, precognition, retrocognition, psychokinesis, out-of-body experiences, mental mediumship, demonic possession, apparitions and time travel.

Prerequisite: A course in Philosophy or permission of the Department.

Lectures and discussion three hours a week.

Philosophy 32.251★

Personal Identity and the Self

The course is centred on the concept of personal identity and the problem of the relation of the mind to the body. Both psychological and philosophical concepts of personal identity are delineated and discussed. In the treatment of the mind/body problem, contemporary views are emphasized, with special emphasis on the scope and limits of introspection.

Prerequisite: A course in Philosophy or permission of the Department.

Lectures and discussion three hours a week.

Philosophy 32.252★

Philosophy of Mind

An examination of contemporary work on philosophical issues surrounding the mind. Topics vary from year to year, but may include: materialist theories of mind; the nature of intentional systems; mental realism and instrumentalism; mental images and dreams; mental illness; artificial intelligence. Typically, the readings centre around philosophers concerned with cognitive science.

Prerequisite: Philosophy 32.106★, 32.151★ or 32.251★.

Lectures and discussion three hours a week.

Philosophy 32.260

Philosophy of Religion

A philosophical examination of some characteristic concepts of religion, such as faith, hope, worship,

revelation, miracle, God. (Also listed as Religion 34.260.)

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.266★

Personal Ideals and Lifestyles

Problems of describing, analyzing and evaluating personal ideals and lifestyles are investigated. Emphasis is given to the works of Iris Murdoch and Albert Camus.

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.270

Existentialism and Continental Philosophy

A study of recent philosophical movements in continental Europe. An account is given of the historical origins of these movements in the thought of Kierkegaard, Nietzsche, and Husserl. The views of Heidegger, Sartre, Camus, Merleau-Ponty, Gadamer, Habermas and Foucault, together with those of some of their commentators, are also discussed.

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.280

Language and Communication

This course introduces some of the central topics in the study of language and communication, as pursued by linguists and philosophers. Topics will likely include: the nature of language and communication; the nature of meanings; the relationship between syntax, semantics and pragmatics; the connections between logic, language and thought; language as a social activity. Typically, the readings include works by Austin, Davidson, Chomsky, Frege, Grice, Kripke, Russell and Searle. (Also listed as Mass Communication 27.280 and Linguistics 29.280.)

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.284★

Environments, Technology and Values

An advanced treatment of some ethical issues concerning technology and the built and natural environment, including: sustainable development and the idea of progress, women and the environment, the value of biological diversity, the relation of human beings to the rest of the natural world, whether non-human beings have intrinsic value or rights, triage and distributive justice, obligations to future generations, and the conflict between liberty and equality.

Prerequisite: Philosophy 32.184★ or permission of the Department.

Lectures and discussion three hours a week.

Philosophy 32.286★

Art and Ideas: From Ancient Greece to the Twentieth Century

A survey of theories that have shaped the Western approach to art and art criticism, including Plato, Aquinas, Kant, Hegel and Nietzsche. (Also listed as Art History 11.286★.)

Lectures and discussion three hours a week.

Philosophy 32.287★

Art and Ideas: The Twentieth Century

A survey of theories that have shaped the Western approach to art and art criticism including psychological, sociological, phenomenological, semiotic and aesthetic approaches and including such thinkers as Freud, Amheim, Marx, Heidegger, Barthes and Bell. (Also listed as Art History 11.287★.)

Lectures and discussion three hours a week.

Philosophy 32.290

Truth and Propaganda

A study of techniques, ancient as well as modern, for influencing public opinion. The ethics of various attempts to control, affect or modify mass consciousness, under circumstances of wartime or peace, by the state, political parties, commercial interests or pressure groups, are discussed. Attention is paid to definition of key terms such as "propaganda", "manipulation" and the like, in the light of shifting nuances of different times and usages. The problem of arriving at a satisfactory definition of "truth" to compare or contrast with "propaganda" is one focal point of investigation. The values of an open society, as against those promoted by closed societies, also receive attention, account being taken of subtlety as well as more obvious forms of censorship, and of external as well as internal attempts to influence or subvert public consciousness in a given society. (Also listed as Mass Communication 27.290.)

Prerequisite: A course in Philosophy or Second-year standing.

Lectures and discussion three hours a week.

Philosophy 32.305

German Philosophy: Eighteenth and Nineteenth Centuries

An examination of some major German philosophers of the late eighteenth and nineteenth centuries, including Kant, Hegel, Schopenhauer, Marx and Nietzsche.

Precludes additional credit for Philosophy 32.306★.

Prerequisite: Third-year standing or permission of the Department.

Lectures and discussion three hours a week.

Philosophy 32.306★

Kant to Hegel

The development of German idealism from Kant to Hegel.

Precludes additional credit for Philosophy 32.305.

Prerequisite: Third-year standing or permission of the Department.

Lectures and discussion three hours a week.

Philosophy 32.310

History of Contemporary Philosophy

A study of analytic, hermeneutic and pragmatic philosophies and their interaction. The focus is on major figures in these approaches such as Russell, Wittgenstein and Carnap in analytic philosophy, Heidegger and Gadamer in hermeneutics, and Quine, Goodman and Rorty in pragmatism.

Prerequisite: 1.0 credit in Philosophy.

Lectures and discussion three hours a week.

Philosophy 32.311★

Philosophy of Law: The Nature of Law

This course involves a consideration of the concept

of law, and of those concepts that are commonly associated with it, viz. rules, obligations, authority, coercion, and force. (Also listed as Law 51.311★.)
 Prerequisite: A course in Philosophy or permission of the Department.
 Lectures and discussion three hours a week.

Philosophy 32.312★

Philosophy of Law: The Logic of Law

This course examines legal reasoning and analyzes concepts of particular significance to the law. These include justice, rights and duties, liability, punishment, ownership and possession. (Also listed as Law 51.312★.)

Prerequisite: Philosophy 32.311★ or permission of the Department.

Lectures and discussion three hours a week.

Philosophy 32.330

Social and Political Philosophy

A critical examination of major perspectives in social and political philosophy, such as classical and contemporary liberalism, theories of solidarity and general will, feminism, contractarianism, Marxism, libertarianism, and communitarianism. The course will explore the bearing of these views on topics such as the state, political power and authority, democracy, majority rule, rights, human rights, justice, equality, freedom, the public and the private, and international relations.

Prerequisite: A course in Philosophy or permission of the Department.

Lectures and discussion two and one half hours a week.

Philosophy 32.332★

Issues in the Philosophy of Science

An introduction to the main currents of post-positivist philosophy of science. The main concepts discussed in the course include: truth, meaning, testability, theory ladenness, progress, induction, objectivity, rationality, explanation and paradigms. An attempt is made to trace the use of these concepts and the various philosophical problems to which they give rise from early twentieth century positivism through the writings of Karl Popper and Thomas Kuhn to the writings of Paul Feyerabend, Imre Lakatos and Mary Hesse.

Prerequisite: A course in Philosophy or Second-year standing.

Seminar two hours a week.

Philosophy 32.336★

Symbolic Logic

A review of the basic techniques of propositional and predicate logic. Natural deduction and consistency trees. Soundness and completeness. Alternative semantics. Extensions to basic logic: identity, modal logic with possible world semantics, three valued systems, deontic logic.

Precludes additional credit for Philosophy 32.335 (no longer offered).

Prerequisite: Philosophy 32.201★ or permission of the Department.

Lectures and discussion three hours a week.

Philosophy 32.340

Aesthetics

Analysis of problems in the description, interpretation and evaluation of works of art, including music, literature and the visual arts, together with the study of types of aesthetic theory.

Precludes additional credit for Philosophy 32.240 (no longer offered).

Prerequisite: A course in Philosophy or Second-year standing.

Seminar two hours a week.

Philosophy 32.341★

Aesthetics

The first half of Philosophy 32.340, Aesthetics. (For Architecture students only.)

Precludes additional credit for Philosophy 32.241★ (no longer offered).

Prerequisite: Permission of the Department. Only for students who will take Philosophy 32.342★ in a later year.

Seminar two hours a week.

Philosophy 32.342★

Aesthetics

The second half of Philosophy 32.340, Aesthetics. Precludes additional credit for Philosophy 32.242★ (no longer offered).

Prerequisite: A course in Philosophy or Second-year standing.

Seminar two hours a week.

Philosophy 32.351★

Philosophy of Computing

Can machines think? The course begins with an overview of research results concerning "artificial intelligence," followed by a discussion of theoretical limits to computing. Further topics to be considered may include the information-processing view of the mind/brain problem, Searle's paradox and Weizenbaum on what ought not to be computed.

Prerequisite: 1.0 credit in Philosophy or Second-year standing in Computer Science.

Seminar two hours a week.

Philosophy 32.366★

Philosophies of Love

Philosophical theories of love are studied with emphasis on their implications for understanding human nature and developing moral ideals.

Prerequisite: A course in Philosophy or Second-year standing.

Recommended background: Philosophy 32.266★.

Seminar two hours a week.

Philosophy 32.380

Twentieth Century Anglo-American Philosophy

A study of recent philosophical developments in the Anglo-American tradition. An account is given of the origins of this tradition in the thought of Frege, Bradley and James. Some major figures such as Russell, Wittgenstein and Quine, and some major movements such as empiricism, positivism and pragmatism will be discussed.

Prerequisite: Third-year standing or permission of the Department.

Lectures and discussion three hours a week.

Philosophy 32.399

Independent Study

Normally restricted to students with at least 3.0 credits in Philosophy and with high standing in Philosophy courses. The students submit topics for approval and present papers for grading.

Prerequisite: Permission of the Department.

Philosophy 32.401 ★

Philosophy of Language

(Also listed as Linguistics 29.403★.)

Prerequisite: Fourth-year Honours standing in a Linguistics or Philosophy program or permission of either Department.

Seminar two hours a week.

Philosophy 32.402 ★

Philosophy of Social Science

Current practices of theory-building, confirmation and explanation in the social sciences are studied. Issues such as the following are addressed: Does science form a unity? In what manner can one theory or science be reduced to another? Should standards for confirmation vary from one science to another? Is there any privileged form of explanation?

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.411 ★

Philosophy of Action

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.421 ★

Epistemology

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.431 ★

Philosophy of Logic

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.441 ★

Contemporary Moral or Political Philosophy

An intensive study of recent works in one or both of these areas.

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.451 ★

Philosophy and Theories of Mentality

A study of some philosophical issues arising from psychology, biology, cognitive science and neuroscience.

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.461 ★

Philosophy of Religion

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.471 ★, 32.472 ★

Special Topic in Greek Philosophy

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.473 ★, 32.474 ★

Special Topic in Medieval Philosophy

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.475 ★, 32.476 ★

Special Topic in Early Modern Philosophy

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.477 ★, 32.478 ★

Special Topic in Nineteenth Century Philosophy

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.479 ★, 32.480 ★

Special Topic in Twentieth Century Philosophy

Prerequisite: Fourth-year Honours standing in a Philosophy program or permission of the Department.

Seminar two hours a week.

Philosophy 32.490

Tutorial

Prerequisite: Permission of the Department.

Philosophy 32.491 ★, 32.492 ★, 32.493 ★, 32.494 ★, 32.496 ★

Tutorial

Prerequisite: Permission of the Department.

Note:

Students who wish to enrol in a tutorial course must consult the Honours Adviser, *before* registration.

Graduate Course Open to Undergraduate Students

The following graduate course may, with permission, be taken by Honours and Combined Honours students in their Fourth year.

Philosophy

32.580 Graduate Seminar

(Science)

3302 Herzberg Building
Telephone: 520-4377

Academic Administration

Chair
P.J.S. Watson

*Supervisor of Graduate Studies (Associate Director,
Ottawa-Carleton Institute for Physics)*
P.A. Kalyniak

Supervisor of Undergraduate Studies
J.C. Armitage

Teaching Staff

Professors
J.C. Armitage
R.K. Carnegie
L.A. Copley
K.W. Edwards
W.J. Romo
P.J.S. Watson

Visiting Professor
G. Herzberg

Associate Professors
A.L. Carter
S. Godfrey
J.E. Hardy
P.A. Kalyniak
D. A. Karlen
M. Ogg
L. Resnick

Assistant Professors
P.C. Johns
G. Santyr

Distinguished Research Professor
M.K. Sundaresan

Research Professors
P.G. Estabrooks
R.J. Hemingway

Research Associates
C. Charlesworth
M. Doncheski
J. Dubeau
D. Koetke
P. Krieger
K. McLean

Instructors
J.G. Boutin
B.J. Jarosz

*Natural Sciences and Engineering Research Council
Fellows*
S. Godfrey
D.A. Karlen

Adjunct Research Professors
M.A. Ahmed, *University of Qatar*
A. Bielajew, *National Research Council*
I. Cameron, *Ottawa Regional Cancer Centre*
R.L. Clarke
J. Cygler, *Ottawa Regional Cancer Centre*
M. Dixit, *Centre for Research in Particle Physics*
P.G. Estabrooks, *Institute of Particle Physics*
L.H. Gerig, *Ottawa Regional Cancer Centre*
C. Greenstock, *A.E.C.L.*
C.K. Hargrove, *Centre for Research in Particle Physics*
R.J. Hemingway, *Institute of Particle Physics*
M. Losty, *Centre for Research in Particle Physics*
B. McKee, *Ottawa Civic Hospital*
H.J.A.F. Mes, *Centre for Research in Particle Physics*
C. Ng, *Ottawa Regional Cancer Centre*
A. Noble, *C.R.P.P.*
G. Oakham, *Centre for Research in Particle Physics*
G.P. Raaphorst, *Ottawa Regional Cancer Centre*
D.W.O. Rogers, *National Research Council*
C. Ross, *National Research Council*
J.K. Saunders, *National Research Council*
W.D. Sinclair, *Centre for Research in Particle Physics*

Sessional Lecturers
L. Campbell
R.S. Dick
I. Ivanovic
T.A. Ledwell

General Information

Physics 75.101★ and 75.102★, with Mathematics 69.107★ and 69.117★, are the normal prerequisites for entry into Second-year Physics courses. Mathematics 69.102 and 69.112 are suitable alternatives for students having superior competence in Mathematics. Students not directly admissible into Mathematics 69.107★ or equivalent, or not intending to take further courses in Physics, should take Physics 75.105, with Mathematics 69.007★ and 69.107★. Prerequisites for the Third-year Physics courses will normally be Physics 75.211★, 75.236★, and 75.235★, and 75.262★.

The *Physics of Modern Technology* option, described below in detail, is a program that may be of particular interest to students wishing to study physics from an applied point of view and choosing careers in industry. For students entering this option, possibilities of combining studies in certain academic terms together with work in industry in other terms will be strongly explored.

Part-time students are accepted in the Department. Such students should consult with the Department for full details of the available programs.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 112), in addition to all departmental regulations and normal requirements as set out below.

Major Program

15.0 credits as follows:

1. 2.0 acceptable Arts or Social Science credits;
2. 1.0 free optional credit;
3. 12.0 more credits chosen with the approval of the Department.

First Year

Physics 75.101★ and 75.102★;

1.0 acceptable Arts or Social Science credit; and either (a), or (b) below;

(a) Mathematics 69.107★ and 69.117★, and Computer Science 95.102★, 95.103★, and, one of Biology 61.103★ and 61.104★, Chemistry 65.100+, Geology 67.100;

(b) Mathematics 69.102 and 69.112 and one of Biology 61.100, Chemistry 65.100+, Geology 67.100.

+ This course is recommended as being particularly useful.

Second Year

Physics 75.211★, 75.222★, 75.235★, 75.236★, 75.262★;

Mathematics 69.241★, 69.208★ plus 0.5 credit free elective;

Either Mathematics 69.207★ and 69.217★, if pattern (a) was followed in First year; or Computer Science 95.103★ plus 0.5 credit elective, if pattern (b) was followed in First year.

Third Year

Physics 75.338★, 75.342★, 75.364★, 75.371★, 75.381★, 75.387★;

1.0 Arts or Social Science credit;

Either Physics 75.307★ or 75.308★ plus 0.5 credit elective if pattern (a) is followed in years I and II; or, Physics 75.300 if pattern (b) is followed in years I and II.

Honours Programs

20.0 credits as follows:

1. 2.0 acceptable Arts or Social Science credits;
2. 1.0 free option credit;
3. 17.0 more credits chosen with the approval of the Department.

Physics Core

First Year

Physics 75.101★ and 75.102★;

1.0 acceptable Arts or Social Science credit; and either (a), or (b) below;

(a) Mathematics 69.107★ and 69.117★ and Computer Science 95.102★, 95.103★, and, one of Biology 61.103★ and 61.104★, Chemistry 65.100+, Geology 67.100;

(b) Mathematics 69.102 and 69.112 and one of Biology 61.100, Chemistry 65.100+, Geology 67.100.

+ This course is recommended as being particularly useful.

Second Year

Physics 75.211★, 75.222★, 75.235★, 75.236★, 75.262★;

Mathematics 69.241★, 69.208★ plus 0.5 credit free elective;

Either Mathematics 69.207★ and 69.217★ if pattern (a) was followed in First year; or Computer Science 95.103★ plus 0.5 credit elective, if pattern (b) was followed in First year.

Third Year

Physics 75.338★, 75.342★, 75.364★, 75.371★, 75.381★, 75.387★, 75.388★;

1.0 Arts or Social Science credit;

Either Physics 75.307★ or 75.308★ plus 0.5 credit elective if pattern (a) is followed in years I and II; or, Physics 75.300 if pattern (b) is followed in years I and II.

Fourth Year

Physics 75.437★, 75.477★, 75.478★;

Physics 75.458★ or 75.462★ or 75.468★;

One of Physics 75.499, 75.497★ or 75.498★ plus 0.5 credit chosen from Physics, Mathematics, Computer Science or Engineering;

1.0 Arts or Social Science credit and, either (e) or (f) below:

(e) Physics 75.400;

(f) Physics 75.407★ or 75.408★ and 75.447★.

Physics of Modern Technology Option

The normal course requirements for this option are indicated below.

First Year

Physics 75.101★ and 75.102★;

One of Chemistry 65.100, Geology 67.100 or Biology 61.103★ and 61.104★;

Mathematics 69.107★, 69.117★;

Computer Science 95.103★ or 95.105★, and 95.102★ or 95.106★; (95.105★ is recommended

only for students who already have a good knowledge of FORTRAN; 95.102★ and 95.106★ are prerequisites for different subsets of higher-level courses in Computer Science);

1.0 acceptable Arts or Social Science credit.

Second Year

Physics 75.211★, 75.222★, 75.235★, 75.236★, 75.262★;

Mathematics 69.207★, 69.208★, 69.217★, 69.241★;

0.5 credit Arts or Social Science (or 0.5 credit free option).

Third Year

Physics 75.300, 75.335★, 75.338★, 75.342★, 75.364★, 75.371★, 75.387★, 75.388★;

0.5 credit Arts or Social Science (or 0.5 credit free option).

Fourth Year

Physics 75.400, 75.423★, 75.428★, 75.437★, 75.458★, 75.499;
1.0 credit free option (or 1.0 Arts or Social Science credit).

Note:

Particularly recommended courses in Computer Science and Engineering are Computer Science 95.206★ and 95.306★.

In this option, the work in the Physics 75.300 and 75.400 laboratories will emphasize experiments and project work of interest to the high-technology industries. The main areas emphasized in the advanced laboratories will be: modern electronics, digital techniques and methods, use of computers in the control and analysis of experiments, modern optics, ultrasound, and sensing and imaging problems. In Physics 75.499 students will work on projects from lists composed from typical technological projects encountered frequently in industries.

Combined Honours in Geology and Physics

A grade of C+ or better in both Geology 67.100 and Physics 75.101★ and 75.102★, together with an overall Honours standing is required for entry into this program.

First Year

Physics 75.101★ and 75.102★;
Geology 67.100;
Mathematics 69.107★ and 69.117★;
Chemistry 65.100;
1.0 Arts or Social Science credit.

Second Year

Physics 75.211★, 75.235★, and 75.262★;
Geology 67.221★, 67.223★, 67.228★, 67.281★;
Mathematics 69.207★, 69.208★ and 69.241★.

*Third and Fourth Years**Physics:*

One of 75.236★ or 75.222★;
0.5 credit from the 300-level lab courses: 75.307★, 75.308★ or 75.300;
0.5 credit at the 400-level not including the Honours Thesis;
1.0 credit at the 300-level or higher;
0.5 credit at the 200-level or higher

Geology:

3.0 credits, not including the Honours Thesis, to be chosen from 67.321★, 67.323★, 67.324★, 67.332★, 67.385★, 67.386★ and available 400-level courses. At least 0.5 credit at the 400-level is required, for which 67.481★ is strongly recommended; (Students should take careful note of course Prerequisites when making their selection)
2.0 optional credits (one in Computer Science is recommended);
1.0 Arts or Social Science credit;
1.0 credit Honours Thesis (Physics 75.499 or Geology 67.498).

A reading proficiency in French, German or Russian must be demonstrated by the end of the Third year. The thesis must be defended before an interdepartmental committee.

Combined Honours in Physics and Computer Science

The program offers the student the possibility of obtaining skills for tackling problems of an applied nature such as those encountered in the high technology industries. Because students in this program will develop a strong background in physics and related mathematics, they are most likely to have the skills that will be in high demand in the next decade in a variety of areas. Students in this program follow a prescribed Combined Honours B.Sc. program which features equal emphasis on physics and computer science.

The program is administered by the Committee on Combined Programs with Computer Science (CCPCS); the Committee consists of representatives from the School of Computer Science, the Department of Physics, and the Department of Mathematics and Statistics.

Enrolment in this program is limited. Applicants should note that meeting the minimum published requirements for admission to this program does not imply automatic acceptance.

New students to Carleton should contact the Office of Admissions; students already at Carleton should apply through their Faculty Registrarial Services Office.

Applications for admission to this program will only be processed by the Committee during the periods mid-May to mid-June, and mid-August to mid-September of each year.

To continue in the program, a student must:

1. by the end of August each year, have gained at least one half credit in the past 12 months towards the degree requirements, and
2. have accumulated a GPA of 6.5 or better in each of Computer Science and Physics and a GPA of 5.0 or better overall. (GPAs include any failing grades that have not yet been replaced by a passing grade in the same or a substitute course.)

Failure to comply with these standards requires withdrawal from the program.

Note:

Some courses offered by the School of Business and the Department of Systems and Computer Engineering may be taken for credit as Computer Science courses in this program. For a complete list of these courses see p. 227.

Course requirements are as follows:

First Year

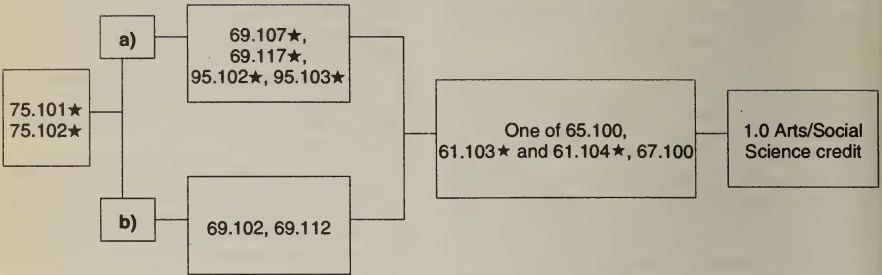
Physics 75.101★ and 75.102★;
Computer Science 95.105★, 95.106★, 95.102★;
Mathematics 69.107★, 69.117★, 69.207★;
1.0 Arts or Social Science credit.

Second Year

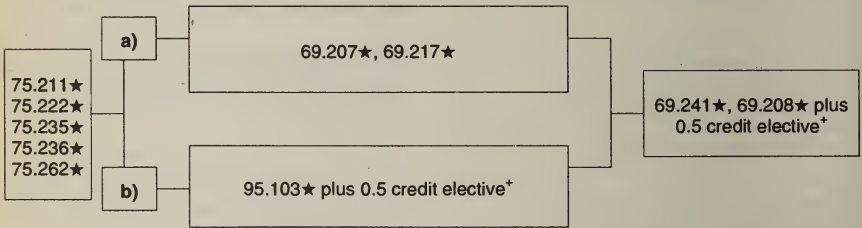
Physics 75.211★, 75.235★, 75.262★;
Computer Science 95.202★, 95.203★, 95.204★;
Mathematics 69.208★, 69.217★, 69.241★;
0.5 credit in Arts or Social Science.

Major Program

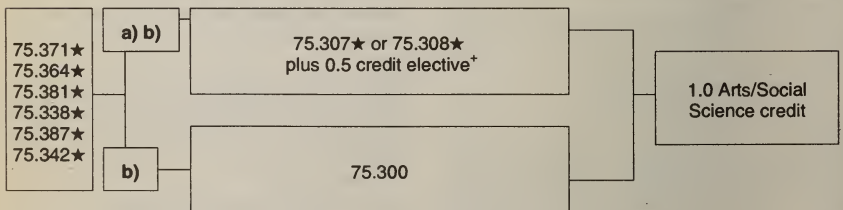
Year I



Year II



Year III



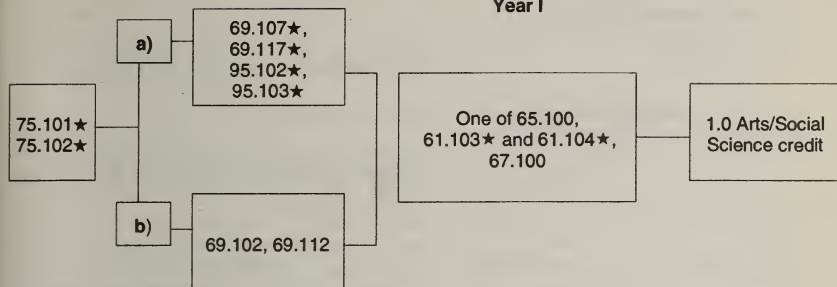
Students who take path "a)" in First Year, should take the same path in both Second and Third years.

A similar note applies to path "b)".

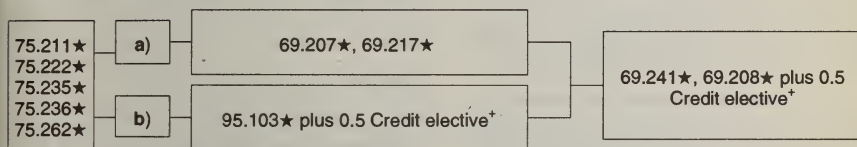
*Electives must assure Science Continuation requirements are met.

Core Honours Program

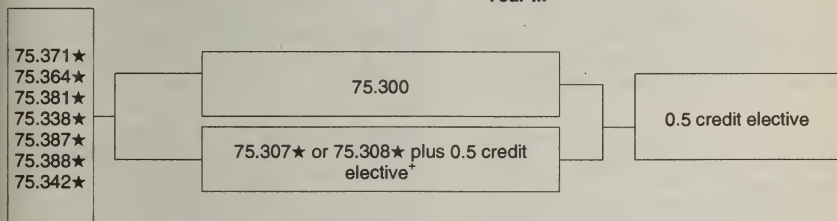
Year I



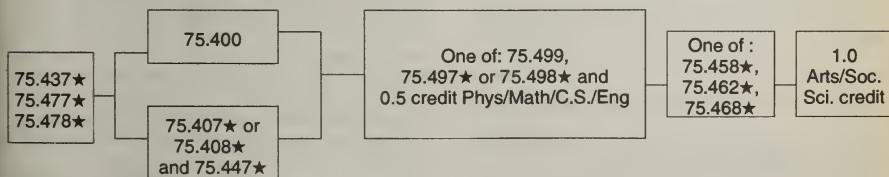
Year II



Year III



Year IV



Students taking path "a)" in First Year, should take the same path in Second year.
A similar note applies to path "b)".

*Elective must assure Science Continuation requirements are met.

Third Year

Physics 75.307★ or 75.308★;
 Physics 75.338★, 75.371★, 75.236★, 75.387★,
 75.388★;
 Three of Computer Science 95.300★, 95.305★,
 95.384★, 95.386★;
 Computer Science 95.306★.

Note:

Students must complete all four of Computer Science 95.300★, 95.305★, 95.384★ and 95.386★ by the end of the Fourth year.

Fourth Year

One of Physics 75.407★ or 75.477★;
 Physics 75.437★;
 One of Physics 75.497★ or 75.498★ or Computer Science 95.495★;
 1.0 credits in Computer Science at the 200-level or above;
 1.0 credits in Computer Science at the 300-level or above;
 0.5 credit in Arts or Social Sciences;
 1.0 free optional credit. 75.222★ (Wave Motion and Optics) is recommended as part of this credit.

Combined Honours in Physics and Chemistry

Honours standing and a grade of C+ or better in each of Physics 75.101★, 75.102★ and Chemistry 65.100 are required for entry into this program. Course requirements are as follows:

First Year

Physics 75.101★ and 75.102★;
 Chemistry 65.100;
 Mathematics 69.107★ and 69.117★;
 and two credits of Arts or Social Sciences or free elective;

Second Year

Physics 75.211★, 75.222★, 75.235★, 75.262★;
 Chemistry 65.210;
 Either Mathematics 69.207★, 69.208★, 69.217★ and 69.241★ (if 69.107★ and 69.117★ were taken in First year;
 or
 Mathematics 69.208★ and 69.241★ (if 69.102 and 69.112 were taken;
 and 1.0 credit of Arts or Social Sciences or one free elective;

Third Year

Physics 75.236★, 75.307★ (or 75.308★) and 75.371★;
 Physics 75.387★ and 75.388★ (or Mathematics 69.375★ and 69.307★);
 Chemistry 65.220, 65.311★, 65.312★ and 65.353★;

Fourth Year

Physics 75.338★ and 75.477★;
 Chemistry 65.315★, 65.354★;
 Two of Chemistry 65.410★, 65.412★ or 65.480★;
 One Honours Project;

1.0 credit Arts or Social Sciences or one free elective ++;

Note: in the latter case 75.478★ is recommended.

++ when choosing between Arts or Social Science courses and free electives, students must ensure that 2.0 Arts or Social Science credits are completed by the end of the program.

Double Honours Program: B.Sc. Honours

Mathematics and Physics

This program requires a minimum of 21.5 credits including 18.5 credits in Mathematics and Physics.

Entrance Criteria

Entrance after First year and continuation at the end of First year in the program requires: successful completion of First year with an average grade of B+ or better in Mathematics 69.102 and 69.112 (or their equivalents), and an average grade of B+ or better in Physics 75.101★ and 75.102★; or permission of both Departments.

Course Requirements

First Year

Mathematics 69.102, 69.112;
 Physics 75.101★, 75.102★;
 Chemistry 65.100 or Biology 61.103★ and 61.104★
 1.0 Arts or Social Science elective credit.

Note:

It is highly recommended that Computer Science 95.103★ be taken in the First year in addition to the foregoing courses. When this course is taken for credit, it will be included in the calculation of the overall GPA.

Second Year

Mathematics 70.200, 70.210, 70.260;
 Physics 75.211★, 75.222★, 75.235★, 75.262★;
 0.5 credit Arts or Social Science elective.

Third Year

Mathematics 70.301★, 70.302★, 70.310;
 Physics 75.307★, 75.338★, 75.371★, 75.381★, 75.342★;
 0.5 credit in Mathematics or Physics at the 300-level;
 Mathematics 70.307★ together with Physics 75.388★, or Physics 75.387★ and 75.388★.

Fourth Year

1.0 Mathematics credit at the 400-level (or equivalent);
 Physics 75.437★, 75.447★, 75.477★, 75.478★;
 1.0 credits at the 300- or 400-level in Mathematics or Physics;
 Honours project in Mathematics or Physics (half credit);
 0.5 credit Arts or Social Science elective.

Graduate Program

Candidates for the Doctor's and Master's degrees are accepted for full-time work in Physics under the supervision of members of the Department. The requirements and general regulations are given in the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Physics 75.101★**Introductory Physics I**

This course introduces mechanics, the properties of matter and gravitation and some aspects of oscillations, wave motion and optics. The laboratory is an essential and autonomous part of the course. A balance is maintained between depth and range. Appropriate for students continuing studies in the physical sciences or engineering.

Precludes additional credit for Physics 75.105.

Prerequisite: OACs in Physics, Calculus or equivalent. An OAC in Algebra and Geometry is highly recommended. Mathematics 69.104★ or 69.107★ must be taken concurrently, if they have not already been completed. Any exceptions require permission of the Department.

Lectures three hours a week, tutorial one hour a week, laboratory three hours a week.

Note: This course is recommended for students who have obtained greater than 65 percent in OAC Calculus. The Undergraduate Adviser in Physics should be consulted for other options.

The Supplemental, Grade-Raising or Deferred Examination for is the final examination of the next scheduled offering of this course. However, for the Winter-term offering of 75.101★, the deadline to apply to write any one of these examinations is June 15, since the final examination in the summer offering of this course is written at the end of June.

Physics 75.102★**Introductory Physics II**

Building on the topics in 75.101★, this course introduces electricity, magnetism and thermodynamics. The laboratory is an essential and autonomous part of the course. A balance is maintained between depth and range. Appropriate for students continuing studies in the physical sciences or engineering.

Precludes additional credit for Physics 75.105.

Prerequisites: Physics 75.101★ and Mathematics 69.104★ or 69.107★ or (concurrent registration in) Mathematics 69.102. Any exceptions require permission of the Department.

Lectures three hours a week, tutorial one hour a week, laboratory three hours a week.

The Supplemental, Grade-Raising or Deferred Examination for 75.102★ is the final examination of the next scheduled offering of this course.

Physics 75.105**Elementary University Physics**

An alternative First-year course, for students who do not intend to take additional courses in Physics, or who lack the prerequisites for Physics 75.101★. Mechanics, properties of matter, thermodynamics, electricity and magnetism, DC and AC circuits, wave motion and light, elements of modern physics. Applications chosen in part from the life sciences.

Precludes additional credit for Physics 75.101★ and 75.102★.

Prerequisites: Mathematics 69.007★ or equivalent, if not previously completed, must be taken concurrently in the First term. Mathematics 69.107★ or equivalent, if not previously completed, must be taken concurrently in the First or Second term.

Lectures three hours a week, laboratory three hours a week.

Physics 75.190**Introduction to Astronomy**

A survey course in astronomy, astrophysics and cosmology, giving a descriptive treatment of the known stellar, galactic and extra-galactic systems. A review of the modern ideas concerning the structure, origin and evolution of the universe. Fields of current interest in astronomy, including the study of quasars, pulsars and supernovae are discussed. Additional topics include the development of space-age astronomy and studies of the possible existence of extra-terrestrial life. A 14-inch telescope is available for student use.

Students intending to take further courses in astronomy are advised to take Physics 75.223★. Credit will not be given for both Physics 75.190 and 75.223★. Two one-and-a-half hour lectures a week.

Physics 75.211★**Mechanics and Properties of Matter**

Classical mechanics of a particle and rigid body. Classical properties of matter. Relativistic mechanics.

Prerequisites: Physics 75.101★ and, 75.102★, Mathematics 69.107★, and 69.117★ or Mathematics 69.102 and 69.112. (Physics 75.105 is also acceptable with a grade of B- or better.)

Lectures three hours a week, laboratory three hours a week.

Physics 75.222★**Wave Motion and Optics**

Physical optics based on electromagnetic theory, oscillator model for dispersion, absorption, scattering, Huygen's principle, reflection and transmission as coherent scattering. Interference, coherence length, diffraction, polarization, double refraction. Geometrical optics.

Prerequisites: Physics 75.101★, 75.102★, Mathematics 69.107★ and 69.117★ or Mathematics 69.102 and 69.112. (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained.)

Lectures three hours a week, laboratory three hours a week.

Physics 75.223★**Astronomy**

This course emphasizes the observational basis of astronomy: It covers history of astronomy, properties of light, solar system observations and stellar astronomy.

Precludes additional credit for Physics 75.190 and 75.220 (no longer offered).

Prerequisites: Physics 75.101★ and 75.102★ or B- in 75.105 or permission of the Department.

Physics 75.224★**Astrophysics and Cosmology**

This builds on the material in 75.233★. It includes a discussion of stellar models, in particular stellar evolution and the end states of stars such as neutron

stars and black holes. Galaxies and quasars are described, and it finishes with a discussion of cosmology.

Precludes additional credit for Physics 75.190 and 75.220 (no longer offered).

Prerequisite: Physics 75.223★ or permission of the Department.

Physics 75.235★

Electricity and Magnetism

The theory of electric and magnetic fields is covered in some detail. Electrostatics, field intensities in various configurations of charges, Gauss' law, electrostatic energy. Dielectric materials, dipoles, dipole-dipole interaction, molecular polarizability. Steady currents, properties of electrical conductors. Magnetic effects of currents and motion of charges in electric and magnetic fields. Time varying currents, electromagnetic induction. Magnetic materials and magnetic measurements.

Prerequisites: Physics 75.101★, 75.102★, Mathematics 69.107★ and 69.117★, or 69.102 and 69.112 (Physics 75.105 is also acceptable provided a minimum grade of B- is obtained).

Lectures three hours a week, laboratory three hours a week.

Physics 75.236★

Physics of Electrical and Electronic Measurements I

D.C. and A.C. circuit theory. Resonant circuits. Basic measuring devices, the oscilloscope; impedances, bandwidth, noise; vacuum tubes, transistors, useful approximations for circuit design; feedback, amplifier, oscillator; operational circuits; digital circuits and measuring devices. Lectures emphasize the physical basis and useful approaches to instrument use and design. Laboratory emphasizes modern digital instrumentation.

Prerequisites: Physics 75.101★, 75.102★ or permission of the Department. Physics 75.235★ is recommended as a prior course.

Lectures three hours a week, laboratory three hours a week.

Physics 75.262★

Modern Physics I

The course is designed to provide a logical transition from classical to modern physics. Elements of special relativity. Kinetic theory of gases. Determination of mass and charge of subatomic particles. Thermal radiation. Rutherford scattering, atomic models. Photoelectric effect, Compton scattering. Bohr theory of the hydrogen atom. Atomic energy states, optical and X-ray spectra, lasers. X-ray production, scattering, absorption. Radioactivity. Elements of nuclear physics.

Precludes additional credit for Physics 75.361★.

Prerequisites: Physics 75.101★, 75.102★, Mathematics 69.102, 69.112, (or Mathematics 69.107★ and 69.117★), Physics 75.211★, 75.235★. (Physics 75.105 is also acceptable in place of 75.101★ and 75.102★ provided a minimum grade of B- is obtained.)

Lectures three hours a week.

Physics 75.291★

Physics of the Environment I

The study of physics is essential to the understanding of many contemporary environmental problems. This course examines energy transformations which directly or indirectly are the sources of much pollution. Among the topics considered are the use of fossil, bio-mass, solar and nuclear-energy sources; thermodynamical and practical limits to efficiency; thermal pollution; radioactivity and the effects of radiation; growth in energy use and estimates of reserves; the need for conservation and control.

Prerequisites: Physics 75.101★, 75.102★ or permission of the Department. (Physics 75.105 is also acceptable provided a minimum grade of C- is obtained. Lectures three hours a week.

Physics 75.292★

Physics of the Environment II

This course can be taken as a continuation of Physics 75.291★ or independently. It carries forward the study of the relationship of physical principles to environmental problems. Topics considered include: air pollution, its measurement, abatement and possible effects on climate; transportation problems and alternatives; noise pollution, its measurement and possible consequences; communication.

Prerequisites: Physics 75.101★, 75.102★ or permission of the Department. (Physics 75.105 is also acceptable provided a minimum grade of C- is obtained.)

Lectures three hours a week.

Physics 75.298★

Research in Physics

Although progress in physics is often assumed to be a straightforward building on a previous base of knowledge, it, in fact, depends on imagination and speculation to a remarkable degree. This course examines how ideas in physics develop, how preconceived notions have prevented progress and how the interplay of theory and experiment are crucial. Seminars are given on current research topics. Students examine cultural and historical aspects of physics, and take part in a group project.

Prerequisites: Physics 75.101★ and Physics 75.102★; or 75.105 (with a minimum of B-); or permission of the Department.

Lectures, seminars and workshops three hours a week.

Physics 75.300

Third-Year Laboratory

The student is expected to complete a small number of projects. These are closely supervised at the beginning of the year, but the student is encouraged to become as independent as possible. Some of the fields for which apparatus is available are: physical optics, optical spectroscopy, electronics, digital techniques, nuclear spectroscopy, cosmic rays, microwaves, solid state phenomena, electrical measurements. Laboratory techniques: basic technical operations (mechanical, electronic, etc.) used in the design and construction of research apparatus. Students with satisfactory competence in shop techniques may be excused from this part of the course. Prerequisite: Permission of the Department. Laboratory and seminar six hours a week, workshop three hours a week.

Physics 75.301★**Advanced Physics Laboratory for Non-Physics Science Students**

This course is designed to initiate students into the use of instrumentation and help them understand the physical principles involved in making key measurements. In consultation with an adviser from the student's Major department, the instructor of this course will endeavour to design the program to meet the needs of each student. Available apparatus as in Physics 75.300.

Prerequisite: Permission of the Department.

Laboratory and seminar six hours a week.

Physics 75.302★**Advanced Physics Laboratory for Non-Physics Science Students**

This course is designed to initiate students into the use of instrumentation and help them understand the physical principles involved in making key measurements. In consultation with an adviser from the student's Major department, the instructor of this course will endeavour to design the program to meet the needs of each student. Available apparatus as in Physics 75.300.

Prerequisite: Permission of the Department.

Laboratory and seminar six hours a week.

Physics 75.307★**Selected Experiments from Physics 75.300**

Prerequisite: Permission of the Department.

Laboratory and seminar six hours a week.

Physics 75.308★**Selected Experiments from Physics 75.300**

Prerequisite: Permission of the Department.

Laboratory and seminar six hours a week.

Physics 75.335★**Physics of Electrical and Electronic Measurements II**

Analysis of a selection of currently important electronic devices using such concepts as Fourier analysis, noise, the transmission line: lock-in amplifier, analog to digital converter, charge sensitive detector, etc. Interfacing and programming small computers. The physical basis of operation and of limitations are emphasized.

Prerequisite: Physics 75.235★ and 75.236★ or permission of the Department.

Lectures three hours a week, laboratory three hours a week.

Physics 75.338★**Electromagnetism**

Electrostatic field and magnetostatics. Examples involving Laplace's and Poisson's equations; vector potential; Faraday's laws of induction; waves in vacuum and dielectric media.

Prerequisites: Physics 75.235★ and 75.387★, or permission of the Department.

Three hours a week.

Physics 75.342★**Heat and Thermodynamics**

Zeroth, First, Second and Third Laws of Thermodynamics; enthalpy, Helmholtz and Gibbs functions and the Maxwell relations; phase transitions; thermodynamics of magnetism; cryogenics (cooling by Joule-

Thompson effect, adiabatic expansion of a gas, adiabatic demagnetization, helium dilution refrigeration; black body radiation; negative temperatures.

Prerequisites: Physics 75.211★ and 75.235★, Mathematics 69.207★, 69.208★, 69.217★ and 69.241★ or permission of the Department.

Lectures three hours a week.

Physics 75.364★**Modern Physics II**

Elements of condensed matter physics - semiconductors, superconductivity. Modern optics. Elements of nuclear physics, fission and fusion methods for generating energy. Introduction to particle physics. Ionizing radiation: production, interaction with matter, detection. Medical physics: radiation biophysics, cancer therapy, imaging.

Prerequisites: Physics 75.262★, Physics 75.371★; or permission of the Department.

Lectures three hours a week.

Physics 75.371★**Elements of Quantum Mechanics**

Analysis of interference experiments with waves and particles; fundamental concepts of quantum mechanics, Schrodinger equation; angular momentum, atomic beams; hydrogen atom; atomic and molecular spectroscopy; Pauli principle; simple applications in the physics of elementary particles.

Precludes additional credit for Physics 75.362★ (no longer offered).

Prerequisite: Physics 75.262★ or 75.361★ or permission of the Department.

Lectures three hours a week.

Physics 75.381★**Classical Mechanics**

Introduction to Lagrangian and Hamiltonian mechanics: Poisson brackets, tensors and dyadics; rigid body rotations: introductory fluid mechanics coupled systems and normal coordinates; relativistic dynamics. Prerequisites: Physics 75.211★, 75.222★, 75.235★, Mathematics 69.207★, 69.208★, 69.217★, 69.241★ or permission of the Department.

Lectures three hours a week.

Physics 75.387★**Mathematical Physics I**

Vector calculus; gradient, divergence, curl and Laplacian in various coordinate systems. Theorems of Gauss, Stokes and Green. Functions of a complex variable: analytic functions, contour integration, residue calculus. Fourier series, Fourier and Laplace transforms. Dirac delta function. Total differential equations of second order. Solution by using transform methods.

Precludes additional credit for Physics 75.386 (no longer offered), Mathematics 69.307★, 70.307★ and 69.376★.

Prerequisites: Physics 75.211★, 75.222★, 75.235★, Mathematics 69.207★, 69.208★, 69.217★, 69.241★, or permission of the Department.

Physics 75.388★**Mathematical Physics II**

Solution of second-order total differential equations by Frobenius' method. Sturm-Liouville theory. Special functions: Legendre, Bessel, Hermite, Laguerre and associated functions. Partial differential equa-

tions: method of separation of variables, eigenfunctions and eigenvalues and eigenfunction expansions. Green's function techniques for solving inhomogeneous partial differential equations.

Precludes additional credit for Physics 75.386 (no longer offered), and Mathematics 69.304★, 69.375★.

Prerequisites: Physics 75.387★ or Mathematics 70.307★ or permission of the Department.

Physics 75.400

Fourth-Year Laboratory

The student is expected to complete detailed projects involving some original planning in both concept and experimental technique. Projects are similar to Physics 75.300 but are of a more sophisticated nature.

Prerequisite: Physics 75.300 or 75.307★ or 75.308★. Laboratory and seminar six hours a week.

Physics 75.407★

Selected Experiments from Physics 75.400

Prerequisite: Physics 75.300 or 75.307★ or 75.308★. Laboratory and seminar six hours a week.

Physics 75.408★

Selected Experiments from Physics 75.400

Prerequisite: Physics 75.300 or 75.307★ or 75.308★. Laboratory and seminar six hours a week.

Physics 75.421★

Topics in Astrophysics and Cosmology

Stellar evolution, including, in particular, stellar modelling, main sequence stars, red giants and the end states of stars. Introduction to general relativity, black holes and related phenomena, big bang cosmology. Prerequisites: Physics 75.223★ and 75.224★ (or 75.220), 75.361★ and 75.362★ or permission of the Department.

Lectures three hours a week.

Physics 75.423★

Physical Applications of Fourier Analysis

Laplace transform and its application to electrical circuits. Fourier transform, convolution. Sampling theorem. Applications to imaging: descriptors of spatial resolution, filtering. Correlation, noise power. Discrete Fourier transform, FFT. Filtering of Noisy signals. Image reconstruction in computed tomography and magnetic resonance. Integral transforms and their application to boundary value problems. Precludes additional credit for Physics 75.424★ (no longer offered).

Prerequisite: Physics 75.387★; or permission of the Department.

Lectures three hours a week.

Physics 75.428★

Modern Optics

Laser theory: stimulated emission, cavity optics, modes; gain and bandwidth; Gaussian beams; atomic and molecular lasers. Mode locking, Q switching. Diffraction theory, coherence, Fourier optics, holography, laser applications. Optical communication systems: nonlinear effects - devices, fiber optics, fiber sensors, integrated optics.

Precludes additional credit for Physics 75.427★ (no longer offered).

Prerequisites: Physics 75.364★, Physics 75.371★;

or permission of the Department.

Lectures three hours a week.

Physics 75.437★

Electromagnetic Radiation

Electromagnetic wave propagation in a vacuum, dielectrics, conductors, and ionized gases, reflection, refraction, polarization at the plane boundary between two media; waveguide and transmission line propagation; dipole and quadrupole radiation fields; antenna systems. Electromagnetic mass, radiation pressure. Tensor notation, transformation of the electromagnetic fields.

Prerequisites: Physics 75.338★, 75.381★, 75.387★ and 75.388★ (except for Mathematics and Physics Double Honours students), or permission of the Department.

Lectures three hours a week.

Physics 75.447★

Statistical Physics

Equilibrium statistical mechanics and its relation to thermodynamics. Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics are derived, and applied in appropriate physical situations. Fluctuations. Kinetics and transport processes, including the Boltzmann transport equation and some of its applications.

Prerequisites: Physics 75.342★, 75.361★, 75.362★, 75.477★ to be taken concurrently, or permission of the Department.

Lectures three hours a week.

Physics 75.458★

Solid State Physics

An introduction to solid state physics. Topics include crystal structure, phonons and lattice vibrations, conductors, semiconductors, insulators and superconductivity.

Prerequisites: Physics 75.361★ and 75.362★ or permission of the Department.

Lectures three hours a week.

Physics 75.462★

Particle Physics

Properties of leptons, quarks and hadrons. The fundamental interactions, conservation laws, invariance principles and quantum numbers. Resonances in hadron-hadron interactions. Three body phase space. Dalitz plots. Quark model of hadrons, mass formulae. Weak interactions, parity violation, decay of neutral kaons, CP violation, Cabibbo theory.

Also offered at the graduate level, with additional or different requirements, as Physics 75.562★, for which additional credit is precluded.

Prerequisite: Physics 75.477★ or permission of the Department.

Lectures three hours a week.

Physics 75.468★

Nuclear Physics

Ground state properties of nuclei, nuclear forces, nuclear levels. Qualitative treatment of Fermi gas model, liquid drop model, shell model and collective model. Alpha, beta and gamma radioactivities. Fission. Passage of particles through matter. Particle detectors. Elements of neutron physics and nuclear reactors.

Prerequisites: Physics 75.361★ and 75.362★ or permission of the Department.

Lectures three hours a week.

Physics 75.477★

Introduction to Quantum Mechanics I

This course concentrates mainly on the basic interpretative postulates of quantum mechanics. These fundamental concepts are applied to simple one-dimensional problems, and angular momentum theory.

Prerequisites: Physics 75.362★, 75.387★ and 75.388★ or permission of the Department.

Lectures three hours a week.

Physics 75.478★

Introduction to Quantum Mechanics II

Scattering theory and application; bound state problems; approximation methods.

Prerequisite: Physics 75.477★ or permission of the Department.

Lectures three hours a week.

Physics 75.487★

Computational Physics

The use and applicability of micro-, mini- and main-frame computers for solving physics problems. Introduction to computer architectures, operating systems and networks commonly encountered in physics experiments or applications. Programming techniques, use of libraries and graphics packages, with emphasis on packages in current use in major physics applications. Considerations of computer hardware, and interfacing computers to physics experiments. Statistical analysis, fitting and Monte Carlo methods, with particular consideration to examples from particle physics and medical physics. Problems in numerical analysis, differential equations, integration, etc., with emphasis on methods used for solving problems from different areas of physics.

Also offered at the graduate level, with additional or

different requirements, as Physics 75.502★, for which additional credit is precluded.

Prerequisite: Permission of the Department.

Physics 75.491★

Special Topics in Physics

Each year, at the direction of the Department, a course on a special topic may be offered.

Prerequisite: Permission of the Department.

Physics 75.497★

Fourth-Year Project

Same as Physics 75.499 except that it extends over the Fall term only. (See Physics 75.499 for details.)

Prerequisite: Permission of the Department.

A minimum of six hours laboratory or private study a week.

Physics 75.498★

Fourth-Year Project

Same as Physics 75.499 except that it extends over the Winter term only. (See Physics 75.499 for details.)

Prerequisite: Permission of the Department.

A minimum of six hours laboratory or private study a week.

Physics 75.499

Fourth-Year Project

These are advanced projects of an experimental or theoretical nature with an orientation towards research. A written progress report, by mid-term for Physics 75.497★, 75.498★, and by mid-year for Physics 75.499, must be submitted to the student's supervisor prior to the last day for withdrawal from the course. A written and an oral report is required at the conclusion of the project.

Prerequisite: Permission of the Department.

A minimum of six hours laboratory or private study a week.

(Social Sciences)

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General Information

Ottawa provides a wealth of resources, both in personnel and in research materials, for the student of government, politics, public administration and international relations. Undergraduates will be assisted in making the fullest use of these unique advantages of the national capital. The Department of Political Science offers courses in the following fields of study: Canadian government and politics, comparative institutions and politics, public administration and public policy, international relations, political theory and methodology.

Students should note that it is possible to combine a Pass or Honours program in Political Science with a pattern of studies, such as urban studies, studies in developing areas, etc. Those wishing to do so should consult the Department for a suggested outline of courses.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Calculation of Political Science GPA

For the purpose of admission to, continuation in, and graduation from Political Science programs, the departmental GPA will be calculated over all successful attempts in the discipline.

For the purpose of calculating Class of Honours at graduation, only those courses needed to meet Political Science program requirements (exclusive of language and minor requirements) will be included in the calculation of the departmental GPA.

Pass Programs

A Pass program in Political Science requires Political Science 47.100; one of 47.230 or 47.270; and 4.0 or more additional credits in Political Science.

First-year students intending to enter a Pass (or Honours) program in Political Science should note that they may take a 200-level course concurrently with Political Science 47.100.

A Combined Pass program, including Political Science, requires Political Science 47.100 and 3.0 or more additional credits in Political Science.

Pass students should take a number of courses in related social sciences. Final-year Pass program students with the required standing may, with permission, be admitted to 400-level Honours courses, provided space is available. The entire program must be approved by the Department.

Pass students must maintain a GPA of 4.0 in Political Science.

Honours Programs

The Honours programs may be entered in the First year, or by transfer from Pass programs, if sufficient standing has been obtained. Only students whose past record indicates the ability to meet the Department's language requirement, and to obtain a *B-* or better in the Honours Essay will be recommended for Fourth-year Honours. An Honours student may be approved for a Pass degree at the end of the Third year if the requirements under the Pass program have been completed. The following programs are available.

Honours in Political Science

For full Honours, 20.0 credits will be required, including at least 9.0 credits in Political Science. The Political Science credits must comprise:

1. Political Science 47.100, 47.230, 47.270 and 47.498;
2. The equivalent of 1.0 credit chosen from the following list of courses in Canadian government and politics: Political Science 47.200, 47.201, 47.300★, 47.301★, 47.302★, 47.303★, 47.304★, 47.305★, 47.306★, 47.307★, 47.335★, 47.336★, 47.340, 47.341★, 47.342★, 47.346★, 47.366★, 47.367★, 47.400, 47.401, 47.402★, 47.403★, 47.406★, 47.407★, 47.408★, 47.409★, 47.411★, 47.416★, 47.417★, 47.418★, 47.419★, 47.441★;
3. The equivalent of 1.0 credit chosen from the following list of courses in comparative politics and international relations: Political Science 47.215, 47.260, 47.310, 47.311, 47.312, 47.314, 47.315, 47.316★, 47.317★, 47.320, 47.321, 47.322, 47.323, 47.332★, 47.344★, 47.345★, 47.350★, 47.351★, 47.352★, 47.360★, 47.361★, 47.362★, 47.363★, 47.365★, 47.366★, 47.405, 47.412★, 47.413★, 47.414★, 47.415★, 47.420★, 47.421★, 47.422★, 47.423★, 47.440★, 47.450★, 47.455★, 47.460, 47.461★, 47.463★, 47.464★, 47.466★, 47.467★, 47.482★, 47.483★, 47.484★;

4. 3.0 additional credits in Political Science, of which the equivalent of at least 1.0 credit must be from the 400-level seminars and must be taken at Carleton University.

5. *Language requirement:* The Department requires Honours students to have a knowledge of French. This requirement may be satisfied in one of two ways:

(a) Successful completion of one of French 20.106★, 20.108 (no longer offered), or 20.150, or an equivalent course approved by the Department. Students with a limited background in French should note that it may be necessary for them to take one or more of French 20.100, 20.120, 20.130, and/or 20.140 in order to be admitted to French 20.150.

(b) The Department conducts a language examination once a year in November. This examination is intended for students who possess significant proficiency in the translation of academic prose. If the examination is attempted and failed, the student must then satisfy the language requirement by completing option (a) above.

Students from abroad, whose mother tongue is other than English, or students whose research interests require another language, may obtain permission from the Supervisor of Undergraduate Studies to substitute this language for French.

6. Candidates present a graduation essay on some topic involving independent investigation (Political Science 47.498); they may be examined orally on this essay and must receive *B-* or better in this course. Political Science 47.498 must be taken at Carleton University.

7. Candidates must select a minor field or fields consisting of 3.0 credits in an approved area outside of Political Science.

Combined Honours

Students intending to enter a program combining Political Science with another discipline should, in their First year, take Political Science 47.100 and the introductory course in the other discipline. For Combined Honours at least 6.0 credits in Political Science will be required, including:

1. Political Science 47.100, 47.230, 47.270 or its equivalent; 1.0 credit chosen from the 400-level seminars in Political Science; 47.498 unless the Honours Essay is written in the other discipline of the Combined program; (if the other department does not offer an Honours essay, students must take Political Science 47.498);
2. The equivalent of 2.0 credits, chosen from requirements 2 and/or 3 listed for the full Honours program. The 2.0 credits may be chosen from one list; one of the 2.0 credits may be the 400-level seminar;
3. The language requirement as stated for Honours (item 5 above) in Political Science must be completed;
4. The requirements as stated for Combined Honours in the other discipline of the Combined program must be met.

Combined Honours, Journalism and Political Science

Students admitted to Journalism prior to 1995-96, may select a course pattern that will lead either to the degree of B.A. with Combined Honours in Journalism and Political Science, in which case the Honours Essay will be written for the Department of Political Science, or to the degree of B.J. with Combined Honours in Political Science, in which case the Honours Essay will be written for the School of Journalism and Communication. Students in either program must complete 20.5 credits, and they must maintain a standing sufficiently high at all times to satisfy the standards of both the School of Journalism and Communication and the Department of Political Science. Students admitted to Journalism in 1995-96 or later must complete 20.0 credits. If they wish to graduate with a B.A. they must complete the Honours essay in Political Science; otherwise, the degree awarded will be the B.J. (Hons.). Please refer to the statement of standing on p. 354 (Journalism) and the regulations of the Faculties of Arts and Social Sciences, p. 71.

Course requirements are:

1. A minimum of 6.0 credits in Political Science including: 47.100, 47.230, 47.270 or its equivalent, 47.498 if the student is in the B.A. program, the equivalent of 2.0 credits chosen from requirements 2 and/or 3 listed for Honours in Political Science, the equivalent of 1.0 credit from the 400-level seminars offered.

2. For those students admitted to Journalism from 1995-96 on, the Journalism courses normally required under the Honours Journalism program, including Journalism 28.100, 28.221, 28.225★, 28.251★, 28.325, 28.326, 28.400, 28.421 and two of 28.425★, 28.426★, 28.427★, 28.428★. Students should consult the School of Journalism and Communication on course patterns. Students admitted to Journalism prior to 1995-96 should consult the School of Journalism and Communication for requirements.

3. The language requirement as stated for Honours in Political Science (item 5 above) must be completed.

4. An approved course in Canadian history. (Students who wish to practise journalism in another country may be advised to choose a different history course.)

Combined Honours, Political Science and Economics

Students in this program are required to complete at least 6.0 credits in Political Science including Political Science 47.100, 47.230, and the equivalent of 1.0 credit from the 400-level seminars in Political Science. Students in Political Science Combined Honours programs must write an Honours Essay. If the Honours Essay is written in Political Science (47.498), 47.270 is required. If the Honours Essay is written in Economics (43.498), 43.220 is required.

Students must also meet requirements 2, 3 and 4 as stated for Combined Honours in Political Science.

Combined Honours, Political Science and Sociology

Students in this program are required to complete 6.0 credits in Political Science including Political Science 47.100, 47.230, the equivalent of 1.0 credit from the 400-level seminars in Political Science and 47.498 (if the Honours Essay is written in Political Science). In addition, the student must complete one of the following methodology sequences:

- (a) in the Second year, Political Science 47.270; in the Third year, Sociology, 53.370; or
- (b) in the Second year, Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended); in the Third year, Political Science 47.471★ and 47.472★. Students should note that Political Science 47.471★ and 47.472★ may not be offered every year.

Students must also meet requirements 2, 3 and 4 as stated for Combined Honours in Political Science.

Note:

See also p. 491 and consult the Department of Sociology and Anthropology.

Honours and Combined Honours Standing

Students must maintain a standing sufficiently high at all times to satisfy the requirements of the Faculties of Arts and Social Sciences. (See p. 71.)

Mention: français

Students who wish to qualify for the "Mention: français" notation in Political Science may do so by taking the following pattern of courses in their degree program:

- 1. 1.0 credit in the advanced study of the French language a minimum of French 20.150 or 20.152 or French 20.111 or 20.112 (no longer offered).
- 2. 1.0 credit in French-Canadian culture and heritage (two of French 20.267★, 20.268★, 20.281★).
- 3. One of Political Science 47.201 (Introduction à la politique canadienne) or 47.390 (Études dirigées). Political Science 47.201 is recommended.
- 4. Honours students are required to take Political Science 47.499 (Mémoire de recherche) or one of 47.201 or 47.390, whichever was not used to meet requirement number 3.

With the prior approval of the Department, students may substitute appropriate courses taught in French at the University of Ottawa for requirements 2 and 4.

Carleton-Leeds Parliamentary Internship Exchange

The Carleton-Leeds Parliamentary Internship Exchange is a unique opportunity for Honours and Combined Honours students in their fourth year of Political Science to combine academic study with parliamentary internships in Canada and the United Kingdom. Students participating in the exchange spend the Fall term in Ottawa and the Winter term in

London. They spend four days a week in each city serving as parliamentary interns. In addition, they take courses offered by Carleton and Leeds Universities. More information and application forms are available from the Department of Political Science or from Carleton International.

Graduate Program

The Department of Political Science offers studies leading to the degree of Master of Arts and to the degree of Doctor of Philosophy. For further details consult the *Graduate Studies and Research Calendar*.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Prerequisites

Except in special circumstances, students are required to have taken the prerequisites listed in the Calendar. Appropriate experience and/or equivalent academic background may be substituted with the permission of the Department.

• First Year

Political Science 47.100

Introduction to Political Science

An introduction to four areas of concern in the study of contemporary political issues and problems: political thought, focusing upon the clash of modern ideologies such as fascism, socialism, liberalism, communism and nationalism; comparative government, starting from the Canadian system, and including one other western democracy, a post-communist system and a developing country; international politics; and methods of enquiry.

Lectures and discussion three hours a week.

• Second Year: Pass and Honours Programs

Political Science 47.200

Canadian Government and Politics

A survey of the political process and political institutions in Canada.

Precludes additional credit for Political Science 47.201.

Prerequisite: Political Science 47.100. Third-year students in another discipline will normally be permitted to take this course without having taken Political Science 47.100.

Lectures and discussion three hours a week.

Political Science 47.201

Introduction à la politique canadienne

Une vue générale du processus politique et des institutions politiques au Canada. Travaux peuvent être présentés en français ou en anglais.

Precludes additional credit for Political Science 47.200.

Prerequisite: Political Science 47.100.

Lectures and discussion three hours a week.

Political Science 47.215

Comparative Politics

An examination of concepts, theories and methods employed in the study of comparative politics, with particular emphasis on cross-national comparison of regimes and some of the major issues in the field.

Prerequisite: Political Science 47.100.

Lectures and discussion three hours a week.

Political Science 47.230

History of Political Thought

A study of Western political thought from classical times to the nineteenth century. Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau and other thinkers are considered.

Precludes additional credit for Political Science 47.231 (no longer offered).

Prerequisite: Political Science 47.100. Third-year students in another discipline may normally take this course without having taken Political Science 47.100.

Lectures and discussion three hours a week.

Political Science 47.240

Introduction to Public Administration and Public Policy

An introduction to the important concepts, institutions, and processes in the fields of public administration and public policy. Theoretical, empirical, and applied foundations of these fields will be considered.

Precludes additional credit for Political Science 47.340 (no longer offered).

Prerequisite: Political Science 47.100.

Lectures and discussion three hours a week.

Political Science 47.260

International Relations

A study of global politics and the international political economy. Interactions among state and non-state actors (such as multinational enterprises and international and non-governmental organizations) are examined. Topics include war, terrorism, nuclear proliferation, the implications of a post-Cold War world, contemporary changes in the global political economy, and relations between rich and poor countries.

Prerequisite: Political Science 47.100.

Lectures and discussion three hours a week.

Political Science 47.270

Quantitative Political Science Research Methods

An introduction to quantitative research methods used in political science. The course has four basic components. These are the logic and nature of the quantitative study of politics, research design, data collection methods, and statistical techniques for data analysis. In addition, students have an opportunity to use packaged computer programs in analyzing political and policy-related data.

Prerequisite: Political Science 47.100.

Lectures and discussion three hours a week.

• **Third Year: Pass and Honours Programs**

Political Science 47.300★

Canadian Provincial Politics

A comparative examination of the nature of Canadian provincial politics. Topics include: political culture, history, party systems, electoral systems and voting behaviour.

Prerequisite: Political Science 47.200 or 47.201.

Lectures and discussion three hours a week.

Political Science 47.301★

Canadian Intergovernmental Relations

This course deals with the main conceptual approaches to the structures and socio-economic processes of Canadian intergovernmental relations. Selected policy fields in intergovernmental relations will be included.

Prerequisite: Political Science 47.200 or 47.201 or 47.240.

Lectures and discussion three hours a week.

Political Science 47.302★

Canadian Municipal Government

An examination of the nature and problems of Canadian municipal government, including metropolitan and regional government and provincial-municipal relations.

Prerequisite: Political Science 47.200 or 47.201.

Lectures and discussion three hours a week.

Political Science 47.303★

Canadian Urban Politics

An examination of the nature and problems of Canadian urban politics.

Prerequisite: Political Science 47.200 or 47.201.

Lectures and discussion three hours a week.

Political Science 47.304★

Political Parties and Elections in Canada

An examination of the evolution of the party system, the growth of major and minor party movements and the electoral process in Canada.

Prerequisite: Political Science 47.200 or 47.201.

Lectures and discussion three hours a week.

Political Science 47.305★

Ontario Government and Politics

A survey of the political process and political institutions in Ontario.

Prerequisite: Political Science 47.200 or 47.201.

Lectures and discussion three hours a week.

Political Science 47.306★

Social Power in Canadian Politics

An examination of the role of social forces in the Canadian political process, including interest groups, social movements, elites and classes.

Prerequisite: Political Science 47.200 or 47.201.

Lectures and discussion three hours a week.

Political Science 47.307★

Constitutional Politics in Canada

An examination of the politics of the Canadian constitution. Particular attention will be paid to historical and contemporary constitutional reform.

Prerequisite: Political Science 47.200 or 47.201.

Lectures and discussion three hours a week.

Political Science 47.310

Government and Politics in Africa

The evolution and functioning of African political systems, with emphasis on recent developments in West Central and East Africa.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably 47.215 or 47.260.

Lectures and discussion three hours a week.

Political Science 47.311

Government and Politics of Latin America

The evolution and functioning of Latin American political systems, including political development, state-society relations, regional integration, and North-South relations.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably Political Science 47.215 or 47.260.

Lectures and discussion three hours a week.

Political Science 47.312

Government and Politics of East Asia

The evolution and functioning of the political systems of China, Japan and Korea.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably 47.215.

Lectures and discussion three hours a week.

Political Science 47.314

Politics in Central and Eastern Europe

A comparative examination of political institutions and processes in the states of Central and Eastern Europe.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably 47.215.

Lectures and discussion three hours a week.

Political Science 47.315

Government and Politics of South and South-East Asia

This course on developing areas acquaints the student with the patterns of colonial history, emergent political regimes and problems of development and foreign policy in the countries from Pakistan through the Philippine Islands, with special emphasis on problems of political change.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably 47.215.

Lectures and discussion three hours a week.

Political Science 47.316★

Revolution

An examination of theories of revolution from Aristotle through the present era. Students are encouraged to examine revolution as a concept, and as an empirical fact of central importance to our age.

Prerequisite: Political Science 47.215.

Lectures and discussion three hours a week.

Political Science 47.317★

The Causes of War

A detailed examination of alternate theories of the causes of war. The course examines such alternate perspectives as biological, social and comparative historical approaches, and includes the results of peace research activities of the past two decades.

Prerequisite: Political Science 47.215.

Lectures and discussion three hours a week.

Political Science 47.319★**The Politics of Law and Morality**

This course examines the politics of moral regulation. Drawing upon the experience of Canada, the United States and other jurisdictions, it examines the treatment in law and public policy of such subjects as: capital punishment, sexual orientation, euthanasia, pornography, new reproductive technologies, racial discrimination, religious rights and equality rights.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably Political Science 47.200, 47.215 or 47.230.

Lectures and discussion three hours a week.

Political Science 47.320**Government and Politics in Soviet Successor States**

A study of the evolution and disintegration of the Soviet political system and the emergence of successor states. Emphasis is on their respective civil societies, political cultures, the functioning of their political systems, and relations among them and with other states.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably 47.215.

Lectures and discussion three hours a week.

Political Science 47.321**Government and Politics of Western Europe**

A survey of the political processes and institutions in the democracies of Western Europe, with emphasis on Britain, France, Italy and the German Federal Republic.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably 47.215.

Lectures and discussion three hours a week.

Political Science 47.322**Government and Politics of the United States**

American political thought, constitutional development, and the governmental process.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably 47.215.

Lectures and discussion three hours a week.

Political Science 47.323**Government and Politics in the Middle East**

The evolution and functioning of political systems in the Middle East region, with emphasis on the problems of political stability, the impact of the West, the role of Islam, and war and peace.

Precludes additional credit for Political Science 47.362★ (no longer offered).

Prerequisites: Political Science 47.100 and either a 200-level course in Political Science, preferably Political Science 47.215 or 47.260, or History 24.278.

Lectures and discussion three hours a week.

Political Science 47.330★**Politics and Literature**

A study of imaginative prose in which political ideas and/or political settings dominate. Literature as political communication, the impact of literature upon politics, the peculiar value of literature in the study of politics, its shortcomings.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably 47.230.

Lectures and discussion three hours a week.

Political Science 47.331★**Politics and Psychoanalytic Thought**

An investigation and critique of the contribution of psychoanalytic thought to political and social theory. Emphasis is placed on the origin and function of culture, instinct modification, perversion, character and political order; the psychoanalytic ethic and the therapeutic state; the Freudian-Marxist dialectic and the critique of society.

Prerequisite: Political Science 47.230 or Psychology 49.361★.

Lectures and discussion three hours a week.

Political Science 47.332★**Asian Political Thought**

A comparative treatment of Asian political thought emphasizing the Chinese, Indian and Islamic perspectives.

Prerequisites: Political Science 47.100 and a 200-level course in Political Science, preferably either 47.215 or 47.230.

Lectures and discussion three hours a week.

Political Science 47.333**Modern Political Thought and Ideologies**

An analysis of leading political concepts and ideologies since 1800, including utilitarianism, liberalism, conservatism, socialism and fascism.

Prerequisite: Political Science 47.230.

Lectures and discussion three hours a week.

Political Science 47.334**Ancient and Medieval Political Thought**

An inquiry into the significance for political theory of the ancient and medieval controversies over nature/convention, power/knowledge, time/eternity, theory/practice, and science/mysticism. Such thinkers as Homer, the pre-Socratics, Plato and Aristotle, the neo-Platonists, Augustine, and the Scholastics are considered.

Prerequisite: Political Science 47.230 or Philosophy 32.225 or Law 51.315.

Lectures and discussion three hours a week.

Political Science 47.335★**Canadian Political Ideas**

An examination of the sources and development of political ideas in French and English Canada.

Prerequisite: Political Science 47.200 (or 47.201), or 47.230 (preferably both).

Lectures and discussion three hours a week.

Political Science 47.336★**Canadian Political Culture**

An analysis of the elements of Canadian political culture. Topics include individual beliefs, attitudes and values, the influence of the economy and environment, ideology, political socialization, and regional differences.

Prerequisite: Political Science 47.200 or 47.201.

Lectures and discussion three hours a week.

Political Science 47.341★**Canadian Public Administration**

This course concentrates on the Canadian bureaucracy as a major state actor in policy development. Selected issues and/or case studies in public sector management will be considered with particular attention paid to the process of policy identification through

program development and implementation.
 Precludes additional credit for Political Science 47.340 (no longer offered).
 Prerequisite: Political Science 47.240.
 Lectures and discussion three hours a week.

Political Science 47.342★

Canadian Public Policy

An examination of policy communities and policy networks in Canada with particular attention paid to policy issues, the political environment, policy instruments, impact and outcomes.
 Precludes additional credit for Political Science 47.401 (no longer offered).
 Prerequisite: Political Science 47.240 or 47.340 (no longer offered).
 Lectures and discussion three hours a week.

Political Science 47.344★

Comparative Public Administration

A course on relations between the state bureaucracy or public organizations and civil society in various types of political and economic systems. Themes relevant to developed and developing countries will be considered.
 Precludes additional credit for Political Science 47.440★ (no longer offered).
 Prerequisite: Political Science 47.240 or 47.340 (no longer offered).
 Lectures and discussion three hours a week.

Political Science 47.345★

Comparative Public Policy Analysis

An examination of the formation and impact of public policy including such topics as policy directed at citizens, policies directed at corporations and policies directed toward government itself. Students have an opportunity to consider a variety of political systems as well as a variety of policy areas. Emphasis is placed on developing skills for the analysis of policy formation and impact.
 Prerequisite: Political Science 47.240.
 Lectures and discussion three hours a week.

Political Science 47.346★

Public Affairs and Media Strategies

An examination of the public affairs and issue management strategies of corporations, government departments, and other institutions in Canada from a comparative perspective.
 Prerequisite: Political Science 47.240.
 Lectures and discussion three hours a week.

Political Science 47.350★

Women in Politics: Liberal Democracies I

An examination of the sex/gender dimension of political theory, culture, mass and elite participation, and public policy as manifested in selected liberal democracies, including Canada.
 Precludes additional credit for Political Science 47.313★ (no longer offered).
 Prerequisites: Political Science 47.100 and a 200-level course in Political Science.
 Lectures and discussion three hours a week.

Political Science 47.351★

Women in Politics: Liberal Democracies II

A continued examination of the sex/gender dimension of political theory, culture, mass and elite partici-

pation, and public policy as manifested in selected liberal democracies, including Canada.
 Precludes additional credit for Political Science 47.313★ (no longer offered).
 Prerequisite: Political Science 47.350★.
 Lectures and discussion three hours a week.

Political Science 47.352★

Women in Politics: Third World

An examination of the sex/gender dimensions of development theory and policy, political culture, mass and elite participation, and international agencies as manifested in selected Third World countries.
 Precludes additional credit for Political Science 47.318★ (no longer offered).
 Prerequisites: Political Science 47.100 and a 200-level course in Political Science.
 Lectures and discussion three hours a week.

Political Science 47.360★

International Institutions

Origins, structure and functioning of international institutions with emphasis on the United Nations as well as regional organizations. Topics include peace and security, international aid and development, human rights and the control of global resources.
 Prerequisite: Political Science 47.260.
 Lectures and discussion three hours a week.

Political Science 47.361★

Theories of International Politics

A survey of theoretical approaches to the study of international politics including an examination of the major concepts used for analysis and explanation in the field.
 Prerequisite: Political Science 47.260.
 Lectures and discussion three hours a week.

Political Science 47.363★

Strategic Thought and International Security

A course on the evolution of U.S., Soviet/Russian, and Chinese approaches to strategy and those of other regional powers, as well as the application of strategic thought to selected issues in international security.
 Prerequisite: Political Science 47.260.
 Lectures and discussion three hours a week.

Political Science 47.365★

Comparative Study of Foreign Policy

An examination of the utility of comparative analysis in the study of the objectives, strategies and decision-making processes involved in the foreign policies of states.
 Prerequisite: Political Science 47.260.
 Lectures and discussion three hours a week.

Political Science 47.366★

Canadian Foreign Policy

An examination of the traditions, domestic influences, objectives, capabilities, and decision-making processes, and analysis of selected contemporary issues.
 Prerequisite: Political Science 47.260.
 Lectures and discussion three hours a week.

Political Science 47.367★

Canadian Defence Policy

The evolution of Canadian defence policy in the twentieth century. The course addresses both the

theory of Canadian defence policy and its operational aspects in a broad comparative context, related to themes such as strategic theory, military culture in a modern state, continentalism and military alliances. Prerequisite: Political Science 47.200, 47.201, or 47.260.

Lectures and discussion three hours a week.

Political Science 47.390

Etudes dirigées

Un programme de lectures choisies et de travaux écrits dans le domaine de spécialisation d'un membre du département. Consulter le conseiller des études de premier cycle (Undergraduate supervisor) pour les sujets offerts.

Prerequisite: Third-year standing in the Political Science "Mention: français" program.

• **Fourth Year: Honours and Graduate**

These courses are normally reserved for Honours students in their Fourth year.

Political Science 47.400

Topics in Canadian Government and Politics

Section A: Political Economy of Canada. An examination of selected issues in Canadian political economy including the role of the state in the Canadian economy, the political aspects of foreign ownership and economic structure and political change.

Section B: Canadian Political Institutions. A seminar on selected topics on institutions of Canadian Government at the federal level.

Section C: Canadian Political Behaviour. A seminar on voting, public opinion, political violence, socialization and other aspects of political behaviour in Canada. The course also examines religion, class and region as determinants of political cleavage.

Prerequisite: Political Science 47.200 or 47.201.

Seminars three hours a week.

Political Science 47.402★

Policy Seminar: Problems of Northern Development

A research seminar that examines the issues, the policy processes and the problems of policy implementation in the political and economic development of Canada's northern territories.

Prerequisite: Political Science 47.200 or 47.201.

Seminar three hours a week.

Political Science 47.403★

Politics and the Media

A seminar on the role of the mass media in the Canadian political system from a comparative perspective.

Prerequisite: Political Science 47.200 or 47.201.

Seminar three hours a week.

Political Science 47.405

Federalism

A seminar on the theory and practice of divided political authority. The primary focus is the Canadian federal structure and its current crisis. Using a theme-oriented approach, the methodology is comparative, with relevant aspects drawn from the experience of other federations and quasi-federations.

Prerequisite: Political Science 47.200 or 47.201.

Seminar three hours a week.

Political Science 47.406★

Legislative Process in Canada

A seminar on the role of Parliament and of the individual M.P. in terms of policy making, representation and the passage of legislation.

Prerequisite: Political Science 47.200 or 47.201.

Seminar three hours a week.

Political Science 47.407★

The Politics of Law Enforcement in Canada

A research seminar focusing on major issues in the area of law enforcement policy, police administration and the criminal justice system in Canada. Particular emphasis is given to the role of law enforcement agencies as integral institutions of the Canadian political system.

Prerequisite: Political Science 47.200 or 47.201. Prerequisite may be waived for students with practical experience in law enforcement.

Seminar three hours a week.

Political Science 47.408★

National Security and Intelligence in the Modern State

A research seminar dealing with the state's response to foreign espionage, alleged subversion, terrorism, and counterintelligence in general but with specific reference to the dilemmas of national security operations in liberal societies. Major focus is on the Canadian experience, but with extensive use of materials chronicling the practices of KGB, CIA, BIS, ASIO, MOSSAD, etc.

Prerequisite: Political Science 47.200, 47.201, or 47.260.

Seminar three hours a week.

Political Science 47.409★

Politics in Quebec

An examination of society, culture, economy and politics in Quebec, giving special attention to the politically relevant changes since 1960 and the central place of Quebec within the Canadian federation.

Prerequisites: Political Science 47.200 and a reading knowledge of French or 47.201.

Seminar three hours a week.

Political Science 47.410★

Canadian and Comparative Local Government and Politics

The seminar begins with a comparative survey of the systems of local government in Canada, Britain and the United States, and in the remainder of the course the emphasis on Canadian or comparative, and the problems chosen for study, varies with the interests of the students.

Prerequisites: One of Political Science 47.200, 47.201, or 47.215, and preferably one of 47.302★ or 47.303★.

Seminar three hours a week.

Political Science 47.411★

French-English Relations

A seminar on French-English relations in federal politics and in selected provinces, with emphasis on areas of conflict and methods of conflict management.

Prerequisites: Political Science 47.200 or 47.201 or an approved course in Canadian history. A reading

knowledge of French is recommended.
Seminar three hours a week.

Political Science 47.412★

Politics of Western Liberal Democracies

A seminar that examines the social structure and politics of advanced capitalist societies, including the historical and contemporary relationship between social classes — groupings, political parties and interest groups.

Prerequisite: Political Science 47.200, 47.201, or 47.215.

Seminar three hours a week.

Political Science 47.413★

The State in Advanced Capitalist Societies

A seminar that undertakes comparative analysis of the structure and role of the state in capitalist societies. Specific topics may include state economic intervention, corporatism, welfare state activities and neo-conservatism.

Prerequisite: Political Science 47.200, 47.201, or 47.215.

Seminar three hours a week.

Political Science 47.414★

Theory and Practice in Third-World Development

An examination of the various theoretical approaches to the analysis of development and underdevelopment, of the historical experience of important models of development and of their application to selected countries in Asia, Africa and Latin America.

Prerequisite: Political Science 47.215, 47.260, 47.310, 47.311, 47.312 or 47.315.

Seminar three hours a week.

Political Science 47.415★

Selected Problems in Third-World Development

A research seminar focusing on the nature of international factors that influence Third World development such as multinational corporations, the new international division of labour, the new protectionism, the role of international debt, the politics of the Green Revolution, technology, and development assistance.

Prerequisites: Political Science 47.215, 47.260, 47.310, 47.311, 47.312 or 47.315; and 47.414★.

Seminar three hours a week.

Political Science 47.416★

Labour and the Canadian State

A comparative examination of models of labour and the liberal democratic state, which pays particular attention to the role of the Canadian labour movement in the political process.

Prerequisite: Political Science 47.200 or 47.201.

Seminar three hours a week.

Political Science 47.417★

Political Participation in Canada

A seminar on the causes and implications of political participation by individuals with special reference to Canada. Topics include citizen participation in campaign and party organizations, political protest movements, interest groups, and community associations.

Prerequisites: Political Science 47.200 or 47.201, and 47.270.

Seminar three hours a week.

Political Science 47.418★

Canadian Provincial Government and Politics

An examination of the political processes and institutions of the provinces.

Prerequisite: Political Science 47.200 or 47.201.

Seminar three hours a week.

Political Science 47.419★

The Politics of the Canadian Charter of Rights and Freedoms

An examination of the genesis and impact of the Charter of Rights and Freedoms. Particular emphasis will be placed on the politics of aboriginal, language, and equality rights.

Prerequisite: Political Science 47.200 or 47.201.

Seminar three hours a week.

Political Science 47.420★

Policy Making in the United States

A seminar on conflict and co-operation in the United States legislative and executive/bureaucratic arenas; this course also treats overlapping struggles over policy initiative, innovation and planning. Special emphases are determined by student needs and interests.

Prerequisites: Political Science 47.100 and 47.322.

Seminar three hours a week.

Political Science 47.421★

Politics of Influence in the United States

A seminar on parties, interest groups, coalitions, movements and other significant influences upon who gets what, when, how in the United States. Other topics include elections, democratic accountability and political uses of mass media. Special emphases are determined by student needs and interests.

Prerequisites: Political Science 47.100 and 47.322.

Seminar three hours a week.

Political Science 47.422★

Constitutional Politics

A seminar on the political character of leading western constitutions, with special emphasis on judicial politics and judicial policy-making in the United States; consideration is also given to developments in Canada, Britain and France.

Prerequisites: Political Science 47.100 and 47.322.

Seminar three hours a week.

Political Science 47.423★

The Politics of Southern Africa

This course examines the roots of the contemporary political situation in the countries of Southern Africa and competing explanations in the literature. Also offered at the graduate level, with additional or different requirements, as Political Science 47.523★, for which additional credit is precluded.

Prerequisites: Political Science 47.215 or 47.260, and 47.310.

Seminar three hours a week.

Political Science 47.424★

Elections

A seminar comparing the conduct and meaning of elections in contemporary states. Attention will be given to the connection of elections to concepts of representation, policy mandates, and political parties. The course will also examine electoral systems, and referendums.

Prerequisite: One of Political Science 47.200, 47.201, 47.215, or 47.270.

Seminar three hours a week.

Political Science 47.431★

Marxist Thought

An examination of Marxism with special emphasis on Marx and Engels, and including writings from all periods of their work.

Prerequisite: Political Science 47.230 or 47.333.

Seminar three hours a week.

Political Science 47.432★

Contemporary Marxism

An examination of all relevant interpretations of Marx's theory including evolutionary socialism, Leninism, Trotskyism, Stalinism, Maoism and the main schools of contemporary revisionism.

Prerequisite: Political Science 47.431★.

Seminar three hours a week.

Political Science 47.434

Political Inquiry

A study of competing theoretical methods of inquiry in the discipline — positivism, functionalism, phenomenology, structuralism, and post-structuralism — with particular attention to the claims made for scientific truth. Weber, Polanyi, Feyerabend, Kuhn, Habermas, Foucault, Rorty and others are considered.

Prerequisite: Political Science 47.230 or 47.270.

Seminar three hours a week.

Political Science 47.435

Contemporary Political Theory

Recent work in political theory, stressing major approaches to the understanding of contemporary political life. This seminar includes approaches such as historicism, the sociology of knowledge, positivism, phenomenology, critical theory, existentialism, neo-classicism. Works by such thinkers as Gramsci, Mannheim, Popper, Strauss, Cassirer, Habermas, Sartre, and Voegelin are discussed.

Prerequisite: Political Science 47.230.

Seminar three hours a week.

Political Science 47.436★

Concepts of Political Community I

A critical survey of concepts of political community, including the common good, justice, citizenship, statesmanship, democracy and legitimacy from ancient, modern and contemporary political theory.

Precludes additional credit for Political Science 47.430★ (no longer offered).

Prerequisite: Political Science 47.230.

Seminar three hours a week.

Political Science 47.437★

Concepts of Political Community II

A continued critical survey of concepts of political community, including the common good, justice, citizenship, statesmanship, democracy and legitimacy from ancient, modern and contemporary political theory.

Precludes additional credit for Political Science 47.430★ (no longer offered).

Prerequisite: Political Science 47.436★.

Seminar three hours a week.

Political Science 47.441★

Business-Government Relations in Canada

A seminar on the theory and practice of business-government relations in Canada. The primary focus is on the role of the private sector firm in the Canadian political system and policy process, with case studies addressing issues and problems in the relations of business to government.

Prerequisite: Political Science 47.200, 47.201, or Business 42.361★.

Seminar three hours a week.

Political Science 47.446★

Theories of Public Administration

A seminar on the theories of bureaucracy, organization and comparison. Also offered at the graduate level, with additional or different requirements, as Political Science 47.646★, for which additional credit is precluded.

Prerequisite: Political Science 47.240 or 47.340 (no longer offered).

Seminar three hours a week.

Political Science 47.447★

Public Policy: Content and Creation

This course provides an opportunity to examine and apply major perspectives on the content and creation of public policy. The focus is on the explanation, prediction and design of policy. Perspectives and examples are drawn from a variety of frameworks and from both Canadian and non-Canadian contexts. Also offered at the graduate level, with additional or different requirements, as Political Science 47.647★, for which additional credit is precluded.

Prerequisite: Political Science 47.240 or 47.340 (no longer offered).

Seminar three hours a week.

Political Science 47.448

Public Organizations: Theory and Practice

An examination of the major schools of organizational theory and behaviour as approaches for understanding the nature of public organizations. In the Winter term students prepare research papers on particular public agencies.

Prerequisite: Political Science 47.240 or 47.340 (no longer offered).

Seminar three hours a week.

Political Science 47.450★

Feminist Political Analysis in Comparative Perspective

The themes explored will include the gendered nature of authority, feminist reconceptions of representation and interests, the relationships between sex/gender regimes and state forms, and the strategic treatments of identity politics, race and class difference and nationalisms by various women's movements, especially in relation to public policy.

Prerequisite: Political Science 47.350★ or 47.352★.

Seminar three hours a week.

Political Science 47.455★

Transitions to Democracy

A comparative analysis of processes of democratization. The course will include diverse theoretical approaches to understanding the timing, causes, nature, and limitations of democratization. Examples

will be drawn from Europe and Russia, Latin America, Africa, and Asia.

Prerequisites: Political Science 47.215 or 47.230 and one of 47.310, 47.311, 47.312, 47.314, 47.315, or 47.320.

Seminar three hours a week.

Political Science 47.460

Analysis of International Politics

Some principal issues in international relations; theory building, evaluation of concepts, research design, philosophy of science criteria and policy relevance in ongoing research in international relations theory.

Prerequisite: Political Science 47.260.

Seminar three hours a week.

Political Science 47.461 ★

Foreign Policies of Soviet Successor States

An examination of the foreign policies of the USSR, and of Russia and selected other successor states, with special emphasis on the search for a new security order.

Prerequisites: Political Science 47.260 and 47.320.

Seminar three hours a week.

Political Science 47.463 ★

Analysis of International Political Economy

A seminar on the various theoretical approaches to the study of the international political economy, with a focus on historical development and changing international structures.

Prerequisite: Political Science 47.260.

Seminar three hours a week.

Political Science 47.464 ★

Selected Problems in International Political Economy

A seminar that focuses on contemporary problems and issues in the international political economy, with particular attention given to advanced industrial countries.

Prerequisite: Political Science 47.260.

Seminar three hours a week.

Political Science 47.466 ★

American Foreign Policy

A seminar on sources, trends and conflicting interpretations of the international roles of the United States since World War II. Foreign policy machinery and processes are assessed in terms of the relative importance of perceptions, ideology, self-interest, and domestic and foreign pressures. Special emphases are determined by the needs and interests of students.

Prerequisite: Political Science 47.260.

Seminar three hours a week.

Political Science 47.467 ★

International Politics of North America

An examination of continentalism within Canadian foreign policy during the twentieth century in relation to Britain and the United States.

Prerequisite: Political Science 47.260.

Seminar three hours a week.

Political Science 47.471 ★

Intermediate Polimetrics for Micro Data

This course introduces students to research designs and statistical techniques primarily used in analyzing survey data. Selected topics may vary from year to

year. Students doing Honours papers based on micro data are advised to take this course. Also offered at the graduate level, with additional or different requirements, as Political Science 47.571 ★, for which additional credit is precluded.

Prerequisite: Political Science 47.270.

Seminar three hours a week.

Political Science 47.472 ★

Intermediate Polimetrics for Macro Data

This course introduces students to research designs and statistical techniques primarily used in analyzing macro or aggregate data. Selected topics may vary from year to year. Students doing Honours papers based on macro data are advised to take this course. Also offered at the graduate level, with additional or different requirements, as Political Science 47.572 ★, for which additional credit is precluded.

Prerequisite: Political Science 47.270.

Seminar three hours a week.

Political Science 47.482 ★

International Politics of Africa

The interactions of African states within the African subsystem and with other sectors in the international system. Each year the seminar focuses on a particular theme.

Prerequisite: Political Science 47.260 or 47.310.

Seminar three hours a week.

Political Science 47.483 ★

Foreign Policies of Major East Asian Powers

The foreign policies of the East Asian powers, with special attention to China and Japan; an analysis of the domestic sources of policy, capabilities, interests, decision-making processes and foreign relations.

Prerequisite: Political Science 47.260 or 47.312.

Seminar three hours a week.

Political Science 47.484 ★

International Relations of South and Southeast Asia

A seminar on the foreign policy orientations of the regional actors and interaction with non-regional actors. Special emphasis is given to enduring sources of conflict within the area, and emerging patterns of co-operation, including comparison of ASEAN with SAARC.

Prerequisite: Political Science 47.260 or 47.315.

Seminar three hours a week.

Political Science 47.490

Tutorial in a Selected Field

Tutorials or reading courses on selected topics may be arranged with the permission of the Department and agreement of the instructor.

Tutorial hours arranged.

Political Science 47.491 ★

Tutorial in a Selected Field

Tutorials or reading courses on selected topics may be arranged with the permission of the Department and agreement of the instructor.

Tutorial hours arranged.

Political Science 47.492 ★

Tutorial in a Selected Field

Tutorials or reading courses on selected topics may be arranged with the permission of the Department and agreement of the instructor.

Tutorial hours arranged.

Political Science 47.493★

British Parliamentary Politics

A seminar on British politics, focusing on Parliament and the legislative process. Offered in the Winter term in London, U.K., by faculty members of Leeds University. Administration of this course is governed by the terms and conditions of the Carleton University Undergraduate Calendar, and the Department of Political Science will so co-ordinate with Leeds University.

Prerequisite: Open only to students selected for the Carleton-Leeds Parliamentary Internship Exchange. Seminar three and one-half hours a week.

Political Science 47.494 (3.0 credits)

Carleton-Leeds Parliamentary Internships

Parliamentary internships in Ottawa (Fall term) and London, U.K. (Winter term) four days a week. The grade assigned will be either *Sat* (Satisfactory) or *Uns* (Unsatisfactory). The academic requirements of the course are satisfied through an essay, distinct from the Honours Essay, which integrates the academic and internship components of the Exchange, and an oral examination held after successful completion of the essay requirement. The Department will grant no equivalence for this course.

Prerequisite: Open only to students selected for the Carleton-Leeds Parliamentary Internship Exchange.

Political Science 47.498

Honours Graduation Essay

During their Fourth year, Honours candidates in Political Science are required to present a major research essay and achieve a minimal grade of *B-*. The Honours essay is carried out under the direction of a faculty supervisor who is either selected by the candidate or assigned early in the year. The Honours essay is evaluated by both the supervisor and an appointed reader.

Prerequisite: Fourth-year Honours standing in Political Science.*

Tutorial hours arranged.

Political Science 47.499

Mémoire de recherche

Un travail de recherche dans le domaine de spécialisation d'un membre du département. Consulter le conseiller des études de premier cycle (Undergraduate supervisor) pour les sujets offerts.

Prerequisites: Fourth-year standing in the Political Science "Mention: français" program.*

*Students must refer to regulations of the Faculty of Social Sciences regarding submission of Honours Essays (see p. 76) and to the Department of Political Science course requirements for the Honours Essay, which may be obtained from the Departmental Office.

- **Graduate Courses**

Fourth-year Honours students may, with permission of the Department, be admitted to the following 500-level Political Science seminars, which are more fully described in the *Graduate Studies and Research Calendar*.

Political Science

47.503★ Political Parties in Canada

47.504★ Policy Making in Canada

47.506★ Problems of Canadian Government and Politics I

47.507★ Problems of Canadian Government and Politics II

47.508★ The Politics of Energy and the Environment

47.509★ Canadian Political Economy

47.511★ Canadian Federalism

47.514★ The Transition from Communism

47.515★ Post-Communist Politics in East Central Europe

47.516★ Selected Problems in the Politics of Soviet Successor States

47.517★ Selected Problems in African Politics

47.518★ State, Revolution, and Reform in East Asia

47.519★ Comparative Public Policy

47.520★ Nationalism

47.521★ Politics in Plural Societies

47.522★ Politics of Third-World Development

47.525★ Problems in American Government I

47.526★ Problems in American Government II

47.531★ Modern Political Culture and Ideology

47.532★ Democratic Theories

47.536★ The Canadian and American Political Traditions I

47.537★ The Canadian and American Political Traditions II

47.541★ Canadian Public Administration and Policy Analysis

47.544★ Public Administration in Developed Western Countries

47.545★ Public Administration in Developing Countries

47.548★ Research Seminar in Public Administration I

47.549★ Research Seminar in Public Administration II

47.551★ Selected Issues in Political Economy I

47.552★ Selected Issues in Political Economy II

47.553★ Selected Problems in Western European Politics I

47.554★ Selected Problems in Western European Politics II

47.555★ Selected Problems of Comparative Politics I

47.556★ Selected Problems of Comparative Politics II

47.561★ Analysis of Canadian Foreign Policy

47.573★ Advanced Research Methods

47.581★ Foreign Policies of African States

47.585★ Foreign Policy Analysis

47.586★ Strategic Thought and Issues in International Security

47.587★ Analysis of International Organizations

47.588★ International Political Economy

47.589★ Problems in International Politics

Related Courses

Subject to *prior* approval by the Department, a student in the Honours or Pass program may use one course in a related discipline as a Political Science credit. This permission will be granted only if the content of the transfer course is very closely related to Political Science and if the Department of Political Science does not itself offer a comparable course. Students in the Combined Pass or Honours programs may not use related courses as Political Science credits.

(Social Sciences)

A706 Loeb Building
Telephone: 520-2600, ext. 2626

Academic Administration

Program Co-ordinator and Placement Supervisor
D.C. McKie

General Information

The concentration in Population Studies provides an opportunity for focused study on the growth and characteristics of human populations. This concentration includes formal demography, social demography, and applied population studies. The courses enable the student to be exposed to a variety of topics and approaches one needs to master the field of demographic analysis. Students take these courses in the area of population studies while completing an Honours program in the discipline of Sociology.

Admission to the Concentration

This is a limited enrolment concentration.

Students are admitted to the program at the end of their Third year of study, on the basis of their performance in courses taken up to that time, and on the recommendation of the Program Co-ordinator.

Carleton students applying for the concentration must do so through application to the Department of Sociology and Anthropology office no later than March 31, to be considered for a space in the concentration during their final year of study. Students from other institutions should consult the admissions section of this Calendar for deadlines and procedures.

Graduation Regulations

In order to graduate, students must fulfill all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Program Requirements

The requirements of an Honours B.A. degree in Sociology with a Concentration in Population Studies are:

1. Sociology 53.100 (Introduction to Sociology), or Anthropology 54.100 (Introduction to Anthropology), or Sociology-Anthropology 56.100 (Principles of Comparative Social Structure) with a grade of C+ or better (1.0 credit).

2. Sociology 53.203 (Introduction to Sociological Research) (1.0 credit).

3. Sociology 53.370 (Research Design and Data Analysis); or alternatively Mathematics 69.257★ (Introduction to Statistics) and Mathematics 69.357★ (Sampling Methodology) (1.0 credit).

4. Sociology-Anthropology 56.205 (The Development of Sociological and Anthropological Thought) (1.0 credit).

5. Sociology 53.406 (Contemporary Theoretical Sociology) (1.0 credit).

6. Sociology 53.400★ (Field Placement: Research and Analysis) and a 0.5 additional credit in Sociology and/or Anthropology at the 400- or 500-level (1.0 credit).

7. Sociology 53.495 (Honours Practicum) (1.0 credit). The subject of the research project undertaken must be in the area of Population Studies.

8. Sociology 53.251★ (Introduction to Population Studies) (0.5 credit).

9. Sociology-Anthropology 56.220 (Canadian Society) (1.0 credit).

10. 1.5 additional credits in Sociology and/or Anthropology at the 200- or 300-level. The following courses are recommended: Sociology-Anthropology 56.235, 56.241, Sociology 53.247, 53.252★, Sociology-Anthropology 56.253★, Anthropology 54.319★, Sociology-Anthropology 56.320 and Anthropology 54.331★.

11. Sociology 53.351★ (Methods of Population Analysis) (0.5 credit).

12. A minor consisting of 3.0 credits in one of the following: Economics, Geography, History, Philosophy, Political Science, Psychology, or as arranged in consultation with the Co-ordinator of Honours (Sociology) and the Co-ordinator for Population Studies.

Students must maintain a GPA of 6.5 or better in requirements 1 through 11 listed above, in order to remain in, and graduate with, the Concentration in Population Studies. A maximum of 12.0 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. Honours in Sociology with Concentration in Population Studies.

Field Placement

Students are required to complete Sociology 53.400★ (Field Placement: Research and Analysis) with an assignment at Statistics Canada or other agency as part of their concentration requirements. Students should contact the Placement Supervisor to complete arrangements for their placements during the first week of classes in September upon entrance to Fourth year.

Students are strongly advised to consult the Sociology Honours Co-ordinator and the Co-ordinator for Population Studies regularly through their degree studies to ensure that they are observing departmental, concentration, and University requirements.

(Social Sciences/Science)

B550 Loeb Building
Telephone: 520-2644

Academic Administration

Chair
W.D. Jones

Associate Chair
J.F. Campbell

Chair, Graduate Committee
K. Matheson

Chair, Undergraduate Committee
D.K. Bernhardt

Chair, Ethics Committee
L. Paquet

Teaching Staff

Professors
D.A. Andrews
H. Anisman
R.F. Dillon
P.A. Fried
R. Hoge
W.D. Jones
J.B. Kelly
R.M. Knights
B. Little
D.C. McIntyre
A. Moffitt
B.A. Pappas
J. Partington
W.M. Petrusic
D.C.S. Roberts
L.H. Strickland
W. Thorngate
T.N. Tombaugh
J. Wood
R. Zacharko

Associate Professors
D.K. Bernhardt
J.F. Campbell
F. Cherry
M. Gick
C. Herdman
C. Kristiansen
J. Lefevre
K. Matheson
S. Painter
L. Paquet
S. Parlow
B.W. Tansley
W.E. Walther
R.B. Wells
S.H. Wu

Assistant Professors
R. Coplan
T. Daniels
A. Forth
J. Logan
M. Senechal

Adjunct Professors
A. Blouin, *Private Practice*
J. Blouin, *Private Practice*
J. Bonta, *Solicitor General of Canada*
R. Broughton, *Ottawa General Hospital*
E.J. Burwell, *Carleton University*
M. Cappelli, *Children's Hospital of Eastern Ontario*
J. D'Eon, *Regional Rehabilitation Centre*
R-L Franche, *Ottawa General Hospital*
G.J. Gerber, *Brockville Psychiatric Hospital*
K. Hansen, *Solicitor General of Canada*
D. Harper, *Saint Vincent Hospital*
B. Hu, *Ottawa Civic Hospital*
M.A. Kasian, *Ottawa Separate School Board*
V. Knott, *Royal Ottawa Hospital*
S. Mikail, *Regional Rehabilitation Centre*
E. Mohr, *Elizabeth Bruyere Hospital*
L. Motiuk, *Correctional Services Canada*
R. Nolan, *Ottawa General Hospital*
R. Ogilvie, *Brock University*
P.J. O'Grady, *St. Paul's University*
J. Olds, *Children's Hospital of Eastern Ontario*
L.A. Patrick, *Saint Vincent Hospital*
R.T. Pivik, *University of Ottawa*
A.V. Ravindran, *Royal Ottawa Hospital*
L. Renaud, *Ottawa Civic Hospital*
K.E. Renner, *Carleton University*
D. Robinson, *Correctional Services Canada*
I. Shields, *Correctional Services Canada*
G. Soulodre, *McGill University*
L. Stelmach, *Communications Research Centre*
C. Stoddart, *Private Practice*
A. Tellier, *Ottawa General Hospital*
J.C. de la Torre, *University of Ottawa*
J. Veitch, *National Research Council Canada*
W.G. Webster, *Brock University*
J. Weekes, *Correctional Services Canada*
T. Whalen, *Communications Research Centre*
J.S. Wormith, *Solicitor General Ontario*

Study in Psychology

With the 1992-1993 Academic Year, the Department of Psychology introduced major changes in its degree programs. These changes apply only to those who entered a Psychology degree program after the 1991-1992 academic year.

The Department of Psychology offers two programs in the Faculty of Social Sciences. One leads to a B.A. (Honours) degree in Psychology; the other leads to a B.A. (Pass) degree in Psychology. In the Faculty of Science, the Department offers a program leading to a Bachelor of Science (B.Sc.) degree with Honours in Psychology.

With certain restrictions, these degree programs may be combined with programs in other departments. In addition, the B.A. with Honours and B.A. programs in

Psychology may be undertaken with concentration in Criminology and Criminal Justice. (See p. 229.)

To be eligible to enter, to continue and to graduate from these degree programs, students must fulfil all the University regulations (see p. 52) and all appropriate Faculty regulations (see p. 71 for the Faculty of Social Sciences and p. 106 for the Faculty of Science). In addition students must meet the requirements of the Department of Psychology, as described below.

Course Organization in Psychology

Study in Psychology begins with Introductory Psychology (Psychology 49.100), which is a prerequisite for all other courses offered by the Department. At the 200-level, the Department offers core courses, which are frequently prerequisites for higher level courses. Some combination of these core courses is required in each of the programs of study offered by the Department of Psychology.

Included among the 200-level courses is Psychology 49.200, Introduction to Psychological Research and Statistics, which must be completed by all students enrolled in a Departmental program.

The 200-level courses lead to branching courses, which offer still further specialization in the subject matter of psychology. These and other advanced courses are numbered at the 300- and 400-level. The upper-level courses in psychology are loosely clustered into speciality areas, which may be used to focus study within degree programs. The speciality areas are identified by the next-to-last digit of the course number: Social Psychology (49.x1x), Neuroscience (49.x2x), History (49.x3x), Community (49.x4x), Developmental (49.x5x), Personality (49.x6x), Learning and Cognition (49.x7x), Testing and Assessment (49.x8x).

Courses Outside the Department of Psychology

Credits for the degree that are not specified by the Department of Psychology may be taken in any discipline, subject to the Faculty of Social Sciences regulations beginning on p. 71. Unspecified credits may also be taken in Psychology so long as the maximum number of Psychology credits permitted for the degree is not exceeded.

Students are strongly urged to discuss the suitability of their course selections with the Undergraduate Office of the Department of Psychology.

Calculation of the Psychology GPA

The GPA in Psychology is based on all credits in psychology successfully completed, graded and counted in the degree program for which the student is registered. All such psychology credits to the maximum number permitted in the student's degree program are used in the calculation. Both the minimum number of required credits and the maximum number of psychology credits permitted in a Psychology degree program are given in the program descriptions that follow. Psychology credits beyond the maximum number permitted in a Psychology degree program are not included in the calculation of the GPA and are excluded from the total number of credits counted toward the degree.

The minimum GPA in Psychology required to enter, continue and to graduate in a Psychology degree program are those stated in the Faculty regulations.

(See p.71 and p. 106.)

The GPA in Psychology required for some courses in Psychology degree programs is higher than the minimum described in the Faculty regulations. These exceptions are noted in the program and course descriptions.

Mention: français

Students other than those in the B.Sc. with Honours in Biology and Psychology degree program who wish to qualify for the "Mention: français" notation in Psychology may do so. To qualify, students must undergo placement testing by the Department of French in order to satisfy the language requirement and to protect the integrity of the initiative.

To graduate with the notation "Mention: français" students must include in their program the following:

Year 1

1.0 credit in the advanced study of the French language (a minimum of French 20.150, 20.152 or 20.209). This credit will fulfill Requirement 2 in Year 1 of the B.A. and B.A. with Honours programs and Requirement 4 in the B.Sc. with Honours in Psychology program.

Years 2 and 3

1.0 credit devoted to the history and culture of French Canada at the 200- or 300-level (French 20.267★, 20.268★, 20.280★, 20.281★) or 1.0 credit at the 200- or 300-level offered entirely in French and approved by the Department of Psychology. This credit will fulfill Requirement 4 in Year 2 of the B.A. degree program and Requirements 5 in Year 2 of both the B.A. and B.Sc. with Honours degree programs.

1.0 credit at the 200- or 300-level in Psychology taken entirely in French to satisfy one of the elective requirements in the relevant Psychology degree program. This credit must be approved by the Department of Psychology and must be taken at the University of Ottawa under the Exchange Agreement or at a francophone institution on a Letter of Permission obtained from the Registrar's Services office.

Year 4 (Honours)

1.0 credit at the 400-level in Psychology taken entirely in French at Carleton University. Normally this will be one of Psychology 49.497, 49.498, 49.499 or 49.490★ and 49.492★.

To obtain the notation, students in a B.A. degree program with combined majors must fulfil the requirements for Mention français of both Departments. The Mention français option is not available in combined degree programs in which the other Department does not offer the notation.

B.A. Programs in Psychology

B.A. (Honours) Program

The B.A. with Honours program requires 20.0 credits, with a minimum of 9.0 and a maximum of 12.0 of these taken in Psychology. This program normally takes four years to complete, but may take longer.

In the Third year either a thesis or an essay option becomes available in the B.A. with Honours in Psychology degree program. The thesis option provides increased training in both research methodology and writing and is intended primarily for students who plan post-graduate study and/or a career in research. The essay option offers training in writing and develops skills in literature review and is intended primarily for students who want to obtain this preparation and to take advantage of other opportunities that an Honours degree in Psychology can provide.

The thesis option requires an Honours seminar, which is normally taken in Third year and is usually followed in Fourth year by Psychology 49.498, Thesis for B.A. with Honours in Psychology. The Department of Psychology offers seven Honours seminars (Psychology 49.310, 49.320, 49.340, 49.350, 49.360, 49.370 and 49.380). Each is scheduled for six hours a week. To enter an Honours seminar a student must have a GPA of 8.0 or better in all graded Psychology courses taken at Carleton. Students who elect the thesis option are encouraged to take a second Honours seminar in the Fourth Year. The prerequisites for the thesis course, Psychology 49.498, include a required minimum GPA in all graded Psychology courses taken at Carleton of 9.0.

The essay option requires either an Honours seminar or both Psychology 49.301★ and 0.5 elective credit in Psychology above the 200-level. Psychology 49.499, Essay for B.A. with Honours in Psychology, is normally taken in the Fourth year. The minimum required GPA for the Honours seminar is 8.0 in all graded Psychology courses taken at Carleton. Otherwise, the minimum required GPA required to enter Third year is 6.0 in all graded Psychology courses taken at Carleton. The minimum GPA required to enter Fourth year is 6.5 in all graded Psychology courses taken at Carleton. A requirement of both options is Psychology 49.300, Design and Analysis in Psychological Research (or an acceptable alternate). Students in an approved program which combines study in Psychology and another discipline may take approved alternate courses for Psychology 49.300, 49.498 or 49.499.

Students in part-time study should note that the times when Honours courses are offered may require enrolment during the Day division.

To enter the B.A. with Honours program in Psychology, a student must make application at the Registrarial Services office of the Faculty of Social Sciences. Normally this is done before the start of the Second program year. The periods during the academic year when application may be made are announced by the Registrarial Services office. At the time of application a student should also consult the Undergraduate Office about specific program requirements. Students who apply to change a program

after the start of the Second program year may have difficulty in completing the program in the usual time period.

Failure to maintain the minimum required GPA will result in a student being required to withdraw from the Honours program in Psychology. In addition, to enter and to continue in the B.A. with Honours program, a student must meet the relevant Faculty of Social Sciences regulations. (See p. 71.)

Graduation from the B.A. with Honours program in Psychology requires a GPA of 6.5 or better over all graded Psychology courses counted towards the degree.

A student in the B.A. with Honours program may apply to transfer to the B.A. program at the times specified by the Registrarial Services office and may be graduated with a B.A. degree provided that the requirements for that degree have been satisfied.

The Department's requirements for the degree are given in the table on p. 454 in the recommended sequence in which they should be completed and are summarized in the following list:

1. Psychology 49.100
2. Psychology 49.200
3. 1.0 credit from Psychology 49.220★, 49.250★ and 49.270★
4. 1.0 credit from Psychology 49.210★, 49.230★ and 49.260★
5. Psychology 49.300
6. One of Psychology 49.310, 49.320, 49.340, 49.350, 49.360, 49.370, 49.380 or both Psychology 49.301★ and 0.5 credit in Psychology above the 200-level.
7. 1.0 elective credit in Psychology at 300-level or higher
8. 1.0 elective credit in Psychology
9. Psychology 49.498 or 49.499
10. 2.0 credits from Biology, Chemistry, Computer Science, Geology, Mathematics and Physics
11. 1.0 credit from a discipline in the Faculty of Arts
12. 1.0 credit from a discipline other than Psychology in the Faculty of Social Sciences
13. 3.0 optional credits above 100-level, not in Psychology
14. 1.0 optional credit, not in Psychology
15. 3.0 optional credits

In this program, the maximum number of Psychology credits permitted is 12.0.

Computer Science 95.101★ is recommended as an option in this program, but can not be offered as an optional 0.5 credit in Psychology.

B.A. with Combined Honours in Psychology and Another Discipline

When application is made to enter an Honours program in Psychology and another discipline, the student must declare one or the other as the discipline of primary study. This declaration is determined by

B.A. (Pass) in Psychology

Year 1

1. Psychology 49.100
 2. 1.0 credit from Faculty of Arts¹
 3. 1.0 credit from Faculty of Social Sciences, not Psychology
 4. 2.0 optional credits
-

Year 2

1. Psychology 49.200
 2. 1.0 credit from 49.220★, 49.250★ and 49.270★
 3. 1.0 credit from 49.210★, 49.230★ and 49.260★
 4. 1.0 credit above the 100-level, not in Psychology
 5. 1.0 optional credit, not in Psychology
-

Year 3

1. 1.0 elective credit in Psychology at 300-level or higher
 2. 1.0 elective credit in Psychology
 3. 2.0 optional credits, not in Psychology and above the 100-level
 4. 1.0 optional credit
-

B.A. (Honours) in Psychology

Year 1

1. Psychology 49.100
 2. 1.0 credit from Biology, Chemistry, Computer Science, Geology, Mathematics or Physics²
 3. 1.0 credit from Faculty of Arts¹
 4. 1.0 credit from Faculty of Social Sciences, not Psychology
 5. 1.0 optional credit
-

Year 2

1. Psychology 49.200
 2. 1.0 credit from 49.220★, 49.250★ and 49.270★
 3. 1.0 credit from 49.210★, 49.230★ and 49.260★
 4. 1.0 credit from Biology, Chemistry, Computer Science, Geology, Mathematics, or Physics, not already taken²
 5. 1.0 credit above the 100-level, not in Psychology
-

Year 3

1. 49.300
 2. One of 49.310, 49.320, 49.340, 49.350, 49.360, 49.370, 49.380 or both Psychology 49.301★ and 0.5 credit in Psychology above the 200-level
 3. 1.0 elective credit in Psychology at 300-level or higher
 4. 1.0 optional credit, not in Psychology and above the 100-level
 5. 1.0 optional credit, not in Psychology
-

Year 4

1. One of 49.498 or 49.499
 2. 1.0 elective credit in Psychology
 3. 1.0 optional credit, not in Psychology and above the 100-level
 4. 2.0 optional credits
-

¹ French 20.100 or appropriate level course is recommended.

² A number of courses in the Faculty of Science are without prerequisites and are intended for the non-Science student. These courses are listed on p. 114 of the Undergraduate Calendar. However, any courses in the Faculty of Science for which the student has the prerequisites may be taken. Credit may not be obtained in a Psychology degree program for both Geology 67.100 and Geography 45.105.

B.Sc. (Honours) in Psychology

Year 1

1. Psychology 49.100 as Social Science Elective
2. Math 69.107★ and 69.117★
3. 2.0 credits from Biology 61.103★ and 61.104★, Chemistry 65.100, Geography 45.105 or Geology 67.100 or 67.105, Physics 75.101★ and 75.102★ or 75.105
4. 1.0 additional credit from Science, Social Sciences or Arts

Year 2

1. Psychology 49.200
2. 1.0 credit from 49.220★, 49.250★ and 49.270★
3. Math 69.257★ and 69.259★ or 69.217★ and 69.257★³
4. 1.0 credit from Arts and Social Sciences other than Psychology
5. 1.0 optional credit

Year 3

(See Footnote 3 regarding 49.300)

1. One of 49.320, 49.350, 49.370, or 49.380
2. One of 49.220★, 49.250★, or 49.270★, not previously taken and 49.230★
3. 1.0 elective credit in Psychology
4. 1.0 credit in Arts or Social Sciences other than Psychology
5. 1.0 Science Continuation Credit (not Psychology) as defined on p. 110 of the Calendar

Year 4

1. 49.497
 2. 1.0 credit in Psychology chosen from the following Science Continuation courses: Psychology 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.356★, 49.372★, 49.375★, 49.401★
 3. 1.0 elective credit in Psychology
 4. 1.0 credit above First-Year level in Biology, Chemistry, Geology, Mathematics or Physics
 5. 1.0 optional credit
-

B.Sc. with Honours Combined Biology and Psychology

Year 1

1. Psychology 49.100 as Social Science Elective
2. Math 69.107★ and 69.117★
3. Biology 61.103★ and 61.104★
4. Chemistry 65.100
5. Physics 75.101★ and 75.102★ or 75.105

Year 2

1. Psychology 49.200
2. Psychology 49.220★ and 49.270★
3. Biology 61.201★ and 61.220★
4. 1.0 credit from Arts and Social Sciences other than Psychology
5. Chemistry 65.220

Year 3

1. Mathematics 69.357★ and 69.258★ or Psychology 49.300
2. One of Psychology 49.320 or 49.370
3. 1.0 credit in Psychology chosen from the following Science Continuation courses: Psychology 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.372★, 49.375★, 49.401★
4. Biology 61.335★ and 61.214★
5. 1.0 elective credit in Biology or Biochemistry

Year 4

1. Psychology 49.497 or Biology 61.498 - Thesis in neurophysiology, animal behaviour, neuropsychology or related topic
 2. 1.0 credit in Psychology chosen from the following Science Continuation courses: Psychology 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.375★, 49.401★
 3. Biology 61.435 or equivalent
 4. 1.0 advanced credit in Biology
 5. 1.0 optional credit (unless Biology 61.103★ and 61.104★ is offered in lieu of OAC in Biology)
-

³ 49.300 may be substituted in which case the student must offer 1.0 credit above first-year level in Biology, Mathematics, Chemistry, or Physics chosen with approval of the Department of Psychology.

the order in which the two disciplines are listed on the application. The other discipline must be selected from the Faculty of Social Sciences or the Faculty of Arts.

Application to enter a combined B.A. with Honours program must be made at the Registrarial Services office appropriate to the discipline of primary study. Normally application is made before the start of the Second program year. The periods during the academic year when application may be made are announced by the Registrarial Services office. Students who apply to change a program after the start of the Second program year may have difficulty in completing the program in the usual time period.

The Department's requirements for the B.A. degree with Honours in Psychology are modified when study is combined with another discipline. The Undergraduate Office of the Department of Psychology should be consulted for advice in the selection of courses.

When Psychology is the discipline of primary study, Psychology 49.200, 49.300 and Psychology 49.498 or 49.499 are normally taken to meet Requirements 2, 5, and 9. When the other discipline is the one for primary study Requirements 2 and 5 may be met with approved alternatives in the other discipline, if available. Thus Psychology 49.200 (Requirement 2) may be replaced with Anthropology 54.203, Mass Communication 27.201, Political Science 47.270 or Sociology 53.203. Psychology 49.300 (Requirement 5) may be replaced with Economics 43.220, both Mass Communication 27.400* and 27.402* or Sociology 53.370.

The Honours thesis or essay (Requirement 9) must be completed in the discipline of primary study. If an Honours thesis or essay is not available in the other discipline, either Psychology 49.498 or 49.499 must be taken.

Acceptable alternatives to Psychology 49.498 and 49.499 in combined programs include Anthropology 54.495, Art History 11.499, Biology 61.497, Biology 61.498, Economics 43.498, English 18.498, Film Studies 19.495, Geography 45.491* and 45.492*, Geography 45.499, German 22.499, History 24.499, Journalism 28.498, Law 51.498, Mass Communication 27.497, Music 30.498, Political Science 47.495, Religion 34.499, Russian 36.499, Sociology 53.495, East European Studies 55.498, Women's Studies 09.498.

Requirements 7 and 8 are waived.

A minimum of 7.0 credits in Psychology must be taken in the B.A. with Honours program in Psychology and another discipline. Additional credits in Psychology must be taken to replace those credits for which approved alternatives for 49.200, 49.300, 49.498 or 49.499 are taken. The maximum number of Psychology credits allowed in any B.A. with Honours program is 12.0.

Credit can not be obtained in a Psychology degree program for both a Psychology credit and an alternative credit in another discipline. Approved alternative credits are not used in the calculation of the GPA in Psychology.

B.A. (Pass) Program

The B.A. program is intended for those students who want to have Psychology as their required area of study. The B.A. degree requires a total of 15.0 credits and normally takes three years of study. A minimum of 6.0 and a maximum of 7.0 of the credits must be in Psychology.

To enter the B.A. program in Psychology, a student must make application at the Registrarial Services office of the Faculty of Social Sciences. Normally this is done before the start of the Second program year. The periods during the academic year when application may be made are announced by the Faculty Registrarial Services office. At the time of application a student should also consult the Undergraduate Office about specific program requirements. Students who apply to change a program after the start of the Second program year may have difficulty in completing the program in the usual time period.

The requirements for the degree may be met in part-time study.

Entry to and continuation in the B.A. program in Psychology as well as graduation with the B.A. degree require that the student maintain a GPA of at least 4.0 over all Psychology courses taken at Carleton University.

The student must meet all the relevant University and Faculty of Social Sciences regulations. The University regulations begin on p. 47, and those of the Faculty of Social Sciences on p. 71.

The Department's requirements for the degree are given in the table on p. 454 in the recommended sequence in which they should be completed and are summarized in the following list:

1. Psychology 49.100
2. Psychology 49.200
3. 1.0 credits from Psychology 49.220*, 49.250* and 49.270*
4. 1.0 credits from Psychology 49.210*, 49.230* and 49.260*
5. 1.0 elective credit in Psychology at 300-level or higher
6. 1.0 elective credit in Psychology
7. 1.0 credit from a discipline in the Faculty of Arts
8. 1.0 credit from a discipline other than Psychology in the Faculty of Social Sciences
9. 3.0 optional credits above 100-level, not in Psychology
10. 3.0 optional credits, not in Psychology
11. 1.0 optional credit

In this program the maximum number of Psychology credits permitted is 7.0.

Computer Science 95.101* is recommended as an option in this program, but can not be offered as an optional 0.5 credit in Psychology.

B.A. (Pass) in Psychology and Another Discipline

When application is made to enter a B.A. program in Psychology and another discipline, the student must declare one or the other as the discipline of primary

study. This declaration is determined by the order in which the two disciplines are listed on the application. The other discipline must be selected from the Faculty of Social Sciences or the Faculty of Arts.

Application to enter a combined B.A. program must be made at the Registrarial Services office appropriate to the discipline of primary study. Normally application is made before the start of the Second program year. The periods during the academic year when application may be made are announced by the Registrarial Services office. Students who apply to change a program after the start of the Second program year may have difficulty in completing the program in the usual time period.

The Department's requirements for the B.A. degree in Psychology are modified when study is combined with another discipline. The Undergraduate Office of the Department of Psychology should be consulted for advice in the selection of courses.

When Psychology is the discipline of primary study, Psychology 49.200 is normally taken to meet Requirement 2. When the other discipline is the one for primary study Requirement 2 may be met with an approved alternative in the other discipline, if available. Thus Psychology 49.200 (Requirement 2) may be replaced with Anthropology 54.203, Mass Communication 27.201, Political Science 47.270 or Sociology 53.203.

Requirement 6 is waived.

A minimum of 5.0 credits in Psychology must be taken in a B.A. program in Psychology and another discipline. 1.0 additional credit in Psychology must be taken to replace an alternative credit taken for 49.200 (Requirement 2). The maximum number of credits in Psychology that can be counted towards the B.A. degree is 7.0.

Credit can not be obtained in a Psychology degree program for both a Psychology credit and an alternative credit in another discipline. Approved alternative credits are not used in the calculation of the GPA in Psychology.

B.Sc. Programs in Psychology

B.Sc. (Honours) Program

First Year

1. Psychology 49.100 as Social Science Elective.
2. Mathematics 69.107★ and 69.117★.
3. 2.0 credits from Biology 61.103★ and 61.104★, Chemistry 65.100, Geography 45.105 or Geology 67.100 or 67.105, Physics 75.101★ and 75.102★ or 75.105.
4. 1.0 additional credit from Science, Social Sciences or Arts.

Second Year

1. Psychology 49.200.
2. 1.0 credit from Psychology 49.220★, 49.250★ and 49.270★.
3. Mathematics 69.257★ and 69.259★ or 69.217★

and 69.257★. (Psychology 49.300 may be substituted in Third year, in which case the student must offer 1.0 credit above first-year level in Biology, Mathematics, Chemistry or Physics chosen with approval of the Department of Psychology).

4. 1.0 credit from Arts and Social Sciences other than Psychology.
5. 1.0 optional credit.

Third Year

(See Requirement 3, Second year)

1. One of Psychology 49.320, 49.350, 49.370, or 49.380.
2. One of Psychology 49.220★, 49.250★, or 49.270★, not previously taken and 49.230★.
3. 1.0 elective credit in Psychology.
4. 1.0 credit in Arts or Social Sciences other than Psychology.
5. 1.0 Science Continuation Credit (not Psychology). (See p. 110).

Fourth Year

1. Psychology 49.497.
2. 1.0 credit in Psychology chosen from the following Science Continuation courses: Psychology 49.321★, 49.322★, 49.323★, 49.324★, 49.325★, 49.326★, 49.327★, 49.356★, 49.372★, 49.375★, 49.401★.
3. 1.0 elective credit in Psychology.
4. 1.0 credit above First-year level in Biology, Chemistry, Geology, Mathematics or Physics.
5. 1.0 optional credit.

Departmental Advice

The Department of Psychology maintains an Undergraduate Office, which operates daily from Monday to Thursday. There students will find advice about Psychology programs, course selections and program changes. Faculty and staff are available for discussion of career options and courses of study. The office is located in B552 Loeb Building, and may be reached by telephone at 613-520-2643.

In addition, the Department publishes annually a Student Handbook which presents further details about the requirements of the degree programs as well as other information on study in Psychology at Carleton. The Department also publishes annually a guide to the courses to be offered during the academic year.

Graduate Program

The Department of Psychology offers studies leading to the degree of Master of Arts (M.A.) and to the Doctor of Philosophy (Ph.D.) degree. For details of these programs consult the Department and the Calendar of the Faculty of Graduate Studies and Research.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Courses offered by the Department are presented as lectures for three hours a week, unless another format is specified in the course description.

Psychology 49.100

Introductory Psychology

The course provides a foundation for the scientific understanding of human and animal behaviour. Both biological and social science approaches are considered.

Psychology 49.200

Introduction to Psychological Research and Statistics

An introduction to the various research methodologies and statistical ideas employed within contemporary psychology. Topics covered typically include experimental, observational, case study and archival techniques. The data analysis and inferential techniques are presented at a level emphasizing the elementary logical foundations of measurement, data description, inference, and hypothesis testing. The course emphasizes basic principles rather than techniques, although both are covered.

Note: Credit towards Psychology degree requirements can not be obtained for both Psychology 49.200 and any of the following courses: Anthropology 54.203, Political Science 47.270, Mass Communication 27.201 or Sociology 53.203.

Prerequisite: Psychology 49.100 or permission of the Department.

Lectures and tutorial four hours a week.

Psychology 49.210★

Introduction to Social Psychology

Introduction to contemporary theory and research in social psychology. Areas covered include attitude structure and change, small groups and social learning.

Note: Students who wish to substitute Sociology 53.210 for Psychology 49.210★ should consult the Undergraduate Office of the Department of Psychology. Students may not offer both Sociology 53.210 and Psychology 49.210★ for credit.

Prerequisite: Psychology 49.100.

Psychology 49.220★

Biological Foundations of Behaviour

A general introduction to the biological basis of behaviour with particular reference to biological mechanisms associated with sensory and perceptual processes, motivation, emotion, learning and cognition.

Prerequisite: Psychology 49.100.

Psychology 49.230★

Origins of Modern Psychology

The evolution of psychology in Europe and North America is surveyed with an emphasis on psychology as a specialized area of knowledge and practice in the nineteenth and twentieth centuries.

Prerequisite: Psychology 49.100.

Psychology 49.250★

Foundations of Developmental Psychology

Basic principles of developmental psychology with a concentration on theories and methods. Emphasis is on the psychology of childhood and adolescence.

Prerequisite: Psychology 49.100.

Psychology 49.260★

Introduction to the Study of Personality

An introduction to the study of personality. Consideration of problems, methods and theories.

Prerequisite: Psychology 49.100.

Psychology 49.270★

Introduction to Cognitive Psychology

A general introduction to cognitive processes, including a survey of theories, issues, methods and findings. Topics covered may include pattern recognition, attention, imagery, learning (animal and human), memory, language, and thinking.

Prerequisite: Psychology 49.100.

Psychology 49.300

Design and Analysis in Psychological Research

Techniques in data analysis, probability theory, sampling distribution theory and the ideas and procedures of estimation, classical and Bayesian approaches to hypothesis testing, linear regression and curve fitting, distribution free hypothesis testing, and the analysis of variance methods in experimental design will be covered. Throughout the course, use of the computer for data handling and analysis is stressed and use of available programs such as BMDP and SPSSX is required.

Credit towards Psychology degree requirements cannot be obtained for both Psychology 49.300 and any of the following courses: Sociology 53.370, Mass Communication 27.400★ and 27.402★ or Economics 43.220.

Prerequisites: Psychology 49.200 (or 49.200★, no longer offered), and permission of the Department. Limited enrolment; intended for Honours students in Psychology.

Lectures and tutorial four hours a week.

Psychology 49.301★

Writing for Psychology

An introduction to the processes and skills necessary to write successfully and to read critically in psychology. Among the topics to be covered are time management, literature searches, bibliographic styles, writing styles, graphics and computer-based word processing. Practical exercises in literature review and writing will be presented.

Prerequisites: Psychology 49.200 and permission of the Department. Limited enrolment; intended for Honours students.

Lectures, seminars and tutorial four hours a week.

Psychology 49.310

Social Psychology (Honours Seminar)

An analysis of historical and contemporary developments in social psychology theory, research and methodology. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200 and 49.210★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department required; limited enrolment; intended for

Honours students.

Lectures, seminars and tutorials six hours a week.

Psychology 49.311★

Social Problems

An analysis of one or more social problems from the point of view of social psychology. The problems studied vary from year to year and may include war and peace, prejudice and discrimination, gender roles, politics and social change, leisure and quality of working life.

Prerequisite: Psychology 49.210★.

Lectures and seminars three hours a week.

Psychology 49.312★

Cognitive Processes in Social Psychology

In-depth coverage of one or more sub-areas of social psychology introduced in Psychology 49.210★. Topics may include attitudes, impression formation, attribution of social causality, decision making, and social judgment.

Prerequisite: Psychology 49.210★.

Lectures and seminars three hours a week.

Psychology 49.313★

Group Processes in Social Psychology

In-depth coverage of one or more sub-areas of social psychology introduced in Psychology 49.210★. Topics may include interaction in the dyad, coalition formation in larger groups, history and theory of small group research, North American, West-European and East-European models of group behaviour, and training groups in industry.

Prerequisite: Psychology 49.210★.

Lectures and seminars three hours a week.

Psychology 49.320

Behavioural Neuroscience (Honours Seminar)

A detailed consideration of biological approaches to the study of behaviour and of research methods used in behavioural neuroscience.

Prerequisites: Psychology 49.200 (or 49.200★, no longer offered) and 49.220★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department required; limited enrolment; intended for Honours students.

Lectures, seminars and laboratory tutorials six hours a week.

Psychology 49.321★

Comparative Psychology

An introduction to the development of behavioural capacity from unicellular organisms to man.

Prerequisite: Psychology 49.220★.

Psychology 49.322★

Sensory Processes

The physiological basis of sensation. Topics include sensory mechanisms, neuropsychological bases of perception and psychological phenomena encountered in the various senses.

Prerequisite: Psychology 49.220★.

Lectures and seminars three hours a week.

Psychology 49.323★

Field Course in Animal Behaviour

Offered in the Department of Biology as Biology 61.365★. Only those modules dealing with animal behaviour topics may be offered for Psychology

credit.

Prerequisite: Permission of the Department.

Psychology 49.324★

Drugs and Behaviour

An introduction to synaptic mechanisms and the arrangements of the transmitter-specific brain systems, followed by a discussion of neuro-pharmacological bases of normal and abnormal behaviour and of the behavioural effects of various classes of psychoactive drugs such as stimulants, tranquilizers, opiates, etc.

Prerequisite: Psychology 49.220★.

Lectures and seminars three hours a week.

Psychology 49.325★

Psychopharmacology and Behavioural Medicine

An examination of the relationship between endogenous neurochemical, hormonal and immunological states and various physiological and behavioural pathologies. The contribution of psychological variables to these pathologies will be assessed.

Prerequisite: Psychology 49.324★ or permission of the Department.

Lectures and seminars three hours a week.

Psychology 49.326★

Sleeping and Dreaming

This course is a general introduction to the development, organization and function of sleeping in humans and other species. Sleep disorders such as narcolepsy, the parasomnias and excessive daytime somnolence and their effects upon waking function are also examined. Dreaming and dream disorders are examined in terms of development, organization and function. Emphasis is placed on the psychophysiological study of dreaming and on dreaming as a cognitive activity.

Prerequisites: Psychology 49.100 and 49.220★.

Psychology 49.327★

Human Neuropsychology

An introduction to human experimental neuropsychology with emphasis on the basic principles and methods used to study brain-behaviour relationships in normal and brain-damaged subjects. Subjects to be studied include the development and structure of the human nervous system and the principles of neurology. Among topics that may be considered are hemispheric specialization, handedness, memory, language, motor and spatial abilities and learning disabilities.

Prerequisite: Psychology 49.220★.

Psychology 49.340

Applied Psychology and Program Evaluation (Honours Seminar)

Theoretical and empirical approaches to research and study in an area of applied psychology are examined. Major methodological issues in program evaluation are reviewed. The areas and programs covered may change from year to year and have included forensic and community psychology. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200 and either Psychology 49.210★ or 49.260★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department is required. Limited enrolment; intended for Honours students. Lectures, seminars and tutorials, six hours a week.

Psychology 49.342★

Criminal Behaviour

An examination of behavioural approaches to the classification and treatment of offenders. Theories and research relevant to selected patterns of law-breaking and selected offender types are reviewed. The value of behaviour modification and counselling programs within prisons is examined.

Prerequisite: Psychology 49.210★ or 49.260★.

Lectures and seminars three hours a week.

Psychology 49.343★

Addiction

A critical review of theories and research on the acquisition and maintenance of addictive behaviour. The rationale and outcome of treatment programs for the abuse of alcohol, tobacco, the opiates and the amphetamines.

Prerequisites: 2.0 credits in Psychology including Psychology 49.100.

Psychology 49.344★

Sport and Performance Psychology

An introduction to sport and performance psychology. Topics may include the role of play, sport and physical activity throughout the life span, as well as the mental and social factors involved in the pursuit of excellence in sports and the performing arts.

Prerequisites: Psychology 49.200 and at least one of Psychology 49.210★, 49.250★ or 49.260★.

Lectures and seminars three hours a week.

Psychology 49.345★

Psychology of Motivation and Emotion

A historical review of the concepts of motivation and emotion is provided as a foundation for a detailed examination of such current concepts as anxiety, stress and depression, among the emotions, and obesity, sexual behaviour and the need to achieve, among the motivations. Material is drawn from the physiological, cognitive, social and personality areas of psychology to gain a comprehensive coverage of the selected topics.

Prerequisite: Psychology 49.100.

Lectures and seminars three hours a week.

Psychology 49.346★

Psychological Factors in Health and Illness

Topics covered include sociocultural influences on physical health, psychological factors in physical disease, behavioural diagnostic techniques, pain and its regulation, factors affecting compliance to therapy, and behavioural variables in the treatment and management of physical disorders.

Prerequisite: Psychology 49.100.

Lectures and seminars three hours a week.

Psychology 49.350

Developmental Psychology (Honours Seminar)

The major theoretical and empirical approaches within developmental psychology are examined through a detailed consideration of selected topics. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200, 49.250★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department required. Limited enrolment, intended for Honours students.

Lectures, seminars and laboratory tutorials six hours a week.

Psychology 49.353★

Psychology of Adolescence

Psychological growth and development from puberty to maturity.

Note: No more than two of the following developmental branching courses may be credited toward the B.A. or B.Sc. degree: Psychology 49.351★, 49.352★ (both no longer offered), 49.353★, 49.354★, 49.356★ and 49.357★.

Prerequisite: Psychology 49.250★.

Lectures and seminars three hours a week.

Psychology 49.354★

Psychology of Adult Development and Aging

Development and change after the age of physical maturity.

Note: No more than two of the following developmental branching courses may be credited toward the B.A. or B.Sc. degree: Psychology 49.351★, 49.352★ (both no longer offered), 49.353★, 49.354★, 49.356★ and 49.357★.

Prerequisite: Psychology 49.250★.

Psychology 49.355★

Exceptional Children

Selected topics concerning exceptional children such as mentally retarded, brain damaged, physically handicapped, disturbed and gifted children.

Prerequisite: Psychology 49.250★.

Lectures and seminars three hours a week.

Psychology 49.356★

Cognitive Development

The development of human cognition is examined with a focus on memory, thinking and language through the life span. Topics that may be considered include perceptual and language development, emergent literacy, development of strategies and development of reading and arithmetic skills.

Note: No more than two of the following developmental branching courses may be credited toward the B.A. or B.Sc. degree: Psychology 49.351★, 49.352★ (both no longer offered), 49.353★, 49.354★, 49.356★ and 49.357★.

Prerequisites: Psychology 49.250★ and 49.270★.

Psychology 49.357★

Social Development

The development of the individual is examined with a focus on social cognition and social behaviour. Topics that may be considered include the role of temperament in development, the role of parents, siblings and peers in social/emotional development, the development of prosocial and aggressive behaviour, moral development and the development of self and other understanding.

Note: No more than two of the following developmental branching courses may be credited toward the B.A. or B.Sc. degree: Psychology 49.351★, 49.352★ (both no longer offered), 49.353★, 49.354★, 49.356★ and 49.357★.

Prerequisite: Psychology 49.250★.

Psychology 49.360

Personality (Honours Seminar)

Issues and research methodologies in the study of personality. Included may be a consideration of research on psychopathology and personality theory, and evaluation of psychotherapy/counselling pro-

ess and outcome. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200, 49.260★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department required. Limited enrolment, intended for Honours students.

Lectures, seminars and laboratory tutorials six hours a week.

Psychology 49.361★

Psychoanalytic Theories

Origin and evaluation of psychoanalytic theories with an emphasis on Freud and Jung.

Prerequisite: Psychology 49.250★ or 49.260★.

Lectures and seminars three hours a week.

Psychology 49.362★

Self Theories

An evaluation of the assumptive bases and research evidence relating to the positions of Rogers, Maslow and others.

Prerequisite: Psychology 49.260★.

Lectures and seminars three hours a week.

Psychology 49.363★

Psychology of Women

An examination of the literature on the psychology of women. Topics to be considered include: theories of female personality development, sex differences in ability and personality, biological influences on female behaviour, female sexuality, sex roles, women's roles throughout the life span.

Prerequisite: At least one of Psychology 49.210★, 49.250★ or 49.260★.

Psychology 49.364★

Abnormal Psychology

History of the concept of behavioural abnormality. Theory and selected research dealing with the nature and etiology of behavioural abnormality.

Prerequisites: Psychology 49.260★ or 49.250★ or both Psychology 49.100 and Third-year standing.

Psychology 49.365★

Transpersonal Psychology

This course represents the viewpoint that the scientific study of direct experience can provide valuable knowledge concerning the nature of human consciousness. Concern is also directed towards understanding techniques for altering consciousness and to systems of thought that make the experiences meaningful.

Prerequisite: Psychology 49.200 or 49.300 or 3.0 credits in Psychology.

Psychology 49.370

Cognition (Honours Seminar)

Issues and research methodologies in the study of cognitive processes involved in perception, attention, language, reasoning, problem solving, decision making, human learning, and memory are considered. Throughout the course the major theoretical issues and the empirical studies of human cognition are examined. Students may be required to complete independent research projects.

Prerequisites: Psychology 49.200, 49.270★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the De-

partment required. Limited enrolment, intended for Honours students.

Lectures, seminars, and laboratory tutorials six hours a week.

Psychology 49.372★

Perception

A consideration of data and theory concerning perceptual processes. Such topics as psychophysical methodology, perception of form and space and perceptual learning are discussed.

Prerequisites: Psychology 49.100 and one of Psychology 49.200 or Mathematics 69.107★ and 69.117★ (or equivalent).

Psychology 49.380

Human Assessment (Honours Seminar)

A critical appraisal of assessment techniques used for research, classification, and clinical/counselling purposes. Topics may include reliability, validity, and utility of tests, individual difference measurement in general psychology, ethical issues in testing, and alternatives to orthodox assessment. Laboratory exercises expose the student to selected psychometric and assessment techniques.

Prerequisites: Psychology 49.200 and at least one of 49.210★, 49.250★, 49.260★. A GPA of 8.0 or better in all graded Carleton Psychology courses is normally required. Permission of the Department required. Limited enrolment, intended for Honours students.

Lectures, seminars, and laboratory tutorials six hours a week.

Psychology 49.391★, 49.392★

Practicum in Community Psychology

Through seven-hour-a-week field placements and regular class forums, students are provided with the opportunity to pursue personal learning objectives concerning the application of psychology within the community. Academic requirements are satisfied through a term paper, which integrates the experiential knowledge gained in the placement with theoretical and empirical knowledge gained from the literature review.

Note:

Students registered in the Criminology and Criminal Justice concentration should enrol in Psychology 49.393★ and/or 49.394★.

Prerequisite: Open to Third- and Fourth-year students in Psychology with permission of the Department.

Psychology 49.393★, 49.394★

Field Placement: Criminology and Criminal Justice Concentration

Experience in an agency setting provides the basis for translating the academic dimension into practical involvement in various aspects of criminal justice. There is no supplemental examination in this course. **Prerequisite:** Open only to those students formally admitted to and registered in the Criminology and Criminal Justice Concentration.

Psychology 49.401★, 49.402★, 49.403★

Special Topics in Psychology

The topics of this course, to be offered as demand warrants, vary from year to year and are announced well in advance of the period of registration. A list of this year's topics can be obtained from the Psychol-

ogy Undergraduate Office (B552 Loeb Building) after March 1.

Psychology 49.405★

Psychological Aspects of Product Design Methodology

Methods of designing successful computerized products are a focus of the course. Important issues in product design, product testing, and customer support are covered from a psychological perspective. Topics covered include current guidelines for user-interface design, how to characterize users and their tasks, how to design and interpret user testing, and issues in customer support. Experienced designers and researchers from industry are invited to participate in the course on a regular basis to provide practical view of the design process. Many classes involve workshops in which students work on problems individually or in groups. Students from other disciplines such as Computer Science and Industrial Design may find the course content relevant to their interests.

Prerequisites: Third-year standing and permission of the Department.

Psychology 49.430★

History and Theory of Psychology: Selected Topics

Among topics that may be covered are the history of a particular time period, the history of a content area or issues related to theory in psychology. The course is offered as both faculty and student interests warrant. Announcements of availability and content are made in the Spring of the preceding academic year. Prerequisites: Psychology 49.230★ and Third-or Fourth-year standing or permission of the Department.

Lectures and seminars three hours a week.

Psychology 49.490★, 49.492★

Independent Study

A reading or research course for selected students who wish to investigate a particular topic of interest. Available to Third- and Fourth-year students only. Normally students may not offer more than one credit of independent study in their total program.

Prerequisite: Permission of the Department.

Psychology 49.497

Thesis for B.Sc. with Honours in Psychology

Open to all candidates for the B.Sc. degree with Honours in Psychology. A thesis project is conducted under the direct supervision of a Faculty Adviser from the Department of Psychology. The project may take the form of an experiment or other such work as meets with the approval of the Faculty Adviser and the Course Instructor. Formally-scheduled classes review the principles and practices of scientific writing and the critical evaluation of psychological literature. Topics of professional interest, including ethics, are also considered.

Note: For students who are in their second re-registration for this course and for those who have applied to graduate at the next Convocation, the deadline for receipt of the thesis is the last day for handing in term assignments for the term of registration. For students who are in their final registration or first re-registration, who have not applied to graduate, or who do not plan to re-register, the deadline for receipt of the thesis is the last day of the scheduled examination

period for the term of registration.

Faculty of Science regulations concerning the Honours degree are found on p. 109.

Prerequisites: Fourth-year Honours standing in Psychology, Psychology 49.300 or Mathematics 69.257★ and 69.259★ or Mathematics 69.217★ and 69.257★, one of Psychology 49.320, 49.350, 49.370 or 49.380. Permission of the Department is required. Lectures as scheduled by the Instructor; other hours as arranged with the Faculty Adviser.

Psychology 49.498

Thesis for B.A. with Honours in Psychology

Open to selected candidates for the B.A. degree with Honours in Psychology. A thesis project is conducted under the direct supervision of a Faculty Adviser from the Department of Psychology. The project may take the form of an experiment, a case study, a survey, archival research or other such work as meets with the approval of the Faculty Adviser and the Course Instructor. Formally-scheduled classes review the principles and practices of scientific writing and the critical evaluation of psychological literature. Topics of professional interest, including ethics, are also considered.

Note: For students who are in their second re-registration for this course and for those who have applied to graduate at the next Convocation, the deadline for receipt of the thesis is the last day for handing in term assignments for the term of registration. For students who are in their final registration or first re-registration, who have not applied to graduate, or who do not plan to re-register, the deadline for receipt of the thesis is the last day of the scheduled examination period for the term of registration.

Faculty regulations concerning the Honours thesis are detailed on p. 76.

Prerequisites: Fourth-year Honours standing in Psychology, Psychology 49.300, and one of Psychology 49.310, 49.320, 49.340, 49.350, 49.360, 49.370 or 49.380. Permission of the Department is required. Enrolment is normally limited to Honours students with a GPA of 9.0 or better (B+) in all Carleton Psychology courses counted toward the degree. Lectures as scheduled by the Instructor; other hours as arranged with the Faculty Adviser.

Psychology 49.499

Essay for B.A. with Honours in Psychology

Open to all candidates for the B.A. degree with Honours in Psychology. An essay is prepared under the direct supervision of a Faculty Adviser from the Department of Psychology on a topic that represents a substantive area of psychological study and that is approved by the Faculty Adviser and the Course Instructor. Formally-scheduled classes review the principles and practices of scientific writing and the critical evaluation of psychological literature. Topics of professional interest, including ethics, are also considered.

Note: For students who are in their second re-registration for this course and for those who have applied to graduate at the next Convocation, the deadline for receipt of the essay is the last day for handing in term assignments for the term of registration. For students who are in their final registration or first re-registration, who have not applied to graduate or who do not plan to re-register, the deadline for receipt of the

essay is the last day of the scheduled examination period for the term of registration.

Faculty regulations concerning the Honours essay are detailed on p. 76.

Prerequisites: Fourth-year Honours standing in Psychology, 49.300; both 49.301 ★ and one-half credit in Psychology above the 200-level or one of Psychology 49.310, 49.320, 49.340, 49.350, 49.360, 49.370, 49.380. Permission of the Department is required.

Lectures and discussion as scheduled by the Instructor; other hours as arranged with the Faculty Adviser.

(Social Sciences)

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Academic Administration

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Saul Schwartz
Donald Swartz
Gene Swimmer
Glen Toner
George Warskett
Stanley Winer

General Information

Public administration is the field of study concerned with the choice, design and implementation of government programs. It is analytical in the sense that it attempts to develop an understanding of why politicians and public servants act the way they do, and of what policies or practices are best able to achieve specified goals. It is practical in the sense that it considers actual policies or practices of government, and methods for their reform.

Public administration is also multi-disciplinary. It draws from other disciplines that have something to say about the opportunities and limitations governments face. Political science examines the political system of which the public service is a part, and the processes by which policy decisions are made. Economics considers the allocation of products and resources in markets with and without government involvement. Law addresses the legal control of public authorities and the rights of citizens. Sociology describes the behaviour and motivation of individuals working in bureaucratic settings. Accounting, quantitative methods, history, science, ethics — all can have a bearing on the field of public administration.

The School of Public Administration was established in 1953, and has the distinction of being the first of its kind in Canada. Students of public administration could wish for no better place to study than the national capital. Ottawa is home to many federal government departments and agencies, as well as national associations, research institutes and non-governmental organizations that deal with public policy issues. All are valuable sources of information for enquiring students. In addition, the federal government is a source of career-oriented summer and term employment.

The School offers two undergraduate programs in public administration. The Bachelor of Public Administration is an Honours program designed for students planning a career in the public service. Although a majority of the graduates have traditionally found employment in the public sector, many have professions in the private sector, law, journalism and academia. The Certificate in Public Service Studies is designed for public servants without university training who would like to broaden their educational background through career-related part-time study. Credits taken under the Certificate can subsequently be applied toward a Bachelor of Arts or the Bachelor of Public Administration degree.

Bachelor of Public Administration

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all School regulations and requirements as set out below.

Admission Requirements

Same as for Faculty of Social Sciences. (See p. 44.)

Entry into Second year is dependent on academic promise, with students being assured of admission who have completed First year with 5.0 credits, achieved a grade of B- or better in both Economics 43.100 and Political Science 47.100, and achieved a CI of 7.00.

Probation is not available in the Public Administration Honours program.

Requirements for continuation in Honours are found on p. 78.

Course Requirements

Candidates for the degree of Bachelor of Public Administration must satisfy all requirements for the B.A. with Honours. (See p. 76).

The Bachelor of Public Administration Program comprises 20.0 credits, of which 15.0 are made up by required courses. The School encourages students to take the required courses in the sequence outlined below, in order to avoid timetable conflicts. The School also encourages students to choose as options those courses that are prerequisites for the particular Management and Policy Electives they are considering.

The First year includes 2.0 credits made up by required courses. They introduce the major political ideas and institutions in Canada and other countries, and introduce the behaviour of consumers, producers and governments in individual markets and in the aggregate economy.

The Second and Third years include 8.0 credits made up by required courses that provide a broader background in political science and economics, and a basic knowledge of law, accounting and quantitative methods. The courses in political science emphasize the Canadian political system and the role of the public service within it. The courses in economics emphasize the taxing and spending powers of government. The law course addresses the legal context in which public authorities operate. The accounting and quantitative methods courses develop skills in the collection and interpretation of data useful to both private and public organizations. The Third year also includes a seminar in policy analysis that considers various theories of government decision making, with particular attention being paid to the integration of the insights offered by the various disciplines to which the students have already been introduced.

In Fourth year, students specialize. They select courses that reflect their own career or research interests from a wide selection of Management and Policy Electives. They also write an Honours Essay — an in-depth research paper written under the supervision of an individual faculty member. A topics seminar allows students to present their own research and to discuss that of others.

Full-time students in Fourth year with an Honours GPA of 9.0 or better and an overall GPA of 7.0 or better are eligible to apply for co-operative work terms. These work terms are four months in duration, and are at a junior officer level within the federal public service. Students on a work term may concurrently take no more than one half-credit course. Work terms provide students with opportunities to integrate the academic and applied aspects of public administration. They are neither mandatory nor guaranteed, and are not for credit.

The School requires students to have a reading knowledge of French. This requirement is satisfied by successfully completing one of the following courses, or by demonstrating an equivalent level of reading proficiency based on the placement procedure of the Department of French. The French requirement should be satisfied by the end of the Second year.

French

- 20.106★ Reading French
20.150 Advanced French A

The course requirements of the B.P.A. program are listed below, by year:

First Year

Economics (1.0 credit)

- 43.100 Introduction to Economics

Political Science (1.0 credit)

- 47.100 Introduction to Political Science

Approved Options (3.0 credits)

Students are advised to meet the School's language requirement in their First year. If this is not feasible, then the language requirement must be completed by the end of the Second year of the program.

Second Year

Business (1.0 credit)

- 42.101★ Principles of Financial Accounting, and
42.102★ Management Accounting

Economics (1.0 credit)

- 43.201★ Intermediate Microeconomics for Non-Majors
43.211★ Intermediate Macroeconomics for Non-Majors

Law (1.0 credit)

- 51.205 Introduction to Public Law

Political Science (1.0 credit)

- 47.200 Canadian Government and Politics; or
47.201 Introduction à la politique canadienne

Approved Option (1.0 credit)

(French requirement must be completed if not completed in First year)

Third Year

Economics (1.0 credit)

- 43.347★ Public Finance: Taxation, or
43.441★ Public Sector Economics: Taxation; and
43.348★ Public Finance: Expenditure, or
43.442★ Public Sector Economics: Expenditure

Public Administration (1.0 credit)

- 50.301★ Policy Analysis for Public Administration
50.340★ Introduction to Public Administration and Public Policy

Quantitative Methods (1.0 credit)

- 43.220 Statistical Methods in the Social Sciences; or
47.270 Quantitative Political Science Research Methods

Organizational Behaviour (0.5 credit)

- 42.210★ Management and Organizational Behaviour; or
42.317★/43.357★ Introduction to Industrial Relations; or
51.345★ Labour Law; or
53.346★ Industrial Sociology

Approved Options (1.5 credit)

Fourth Year

Public Administration (1.5 credits)

Only Fourth year students, i.e. those who have already completed 14.0 credits, will be admitted into 50.401★ and 50.498.

- 50.401★ Selected Topics in Public Administration
50.498 Honours Essay

Management and Policy Electives (3.5 credits)

Courses drawn from the Management and Policy

categories must total 3.5 credits, with at least 1.0 credit coming from each category. Courses other than those listed below may be used as electives, with the written approval of the Undergraduate Supervisor.

(A) Management Electives (1.0 to 2.5 credits)

Business

- 42.311★ Micro-Organizational Behaviour
- 42.312★ Personnel Management
- 42.361★ Business and Its Environment

Economics

- 43.465 Industrial Relations

Geography

- 45.433★ Urban Planning (82.333★)

Political Science

- 47.300★ Canadian Provincial Politics
- 47.301★ Canadian Intergovernmental Relations
- 47.302★ Canadian Municipal Government
- 47.303★ Canadian Urban Politics
- 47.305★ Ontario Government and Politics
- 47.306★ Social Power in Canadian Politics
- 47.403★ Politics and the Media
- 47.405 Federalism
- 47.406★ Legislative Process in Canada
- 47.407★ The Politics of Law Enforcement in Canada
- 47.408★ National Security and Intelligence in the Modern State
- 47.409★ Politics in Quebec
- 47.416★ Labour and the Canadian State
- 47.417★ Political Participation in Canada
- 47.441★ Business-Government Relations in Canada
- 47.446★ Theories of Public Administration
- 47.447★ Public Policy: Content and Creation
- 47.448★ Public Organizations: Theory and Practice

Law

- 51.327★ International Economic Law: Trade and Investment
- 51.328★ International Economic Law: International Regulation
- 51.350★ Constitutional Law
- 51.356★ Administrative Law
- 51.374★ Local Government Law
- 51.440★ Arbitration Process in Industrial Relations
- 51.445★ Labour Relations in the Public Service
- 51.451★ Selected Problems in Comparative Constitutional Law
- 51.457★ Administrative Law and Control

Architecture

- 78.340★ City Organization and Planning Processes

(B) Policy Electives (1.0 to 2.5 credits)

Philosophy

- 32.330 Social and Political Philosophy

Economics

- 43.330★ Public Policy Toward Business
- 43.346★ Agricultural Economics
- 43.356★ Introduction to Labour Economics
- 43.360★ Topics in International Economics

- 43.361★ Introduction to International Trade
- 43.362★ International Monetary Problems
- 43.363★ Introduction to Economic Development
- 43.367★ Monetary and Financial Institutions
- 43.380★ Topics in Canadian Economic Policy
- 43.385★ Economics of Natural Resources
- 43.415 History of Economic Thought
- 43.445★ Welfare Economics
- 43.457★ Economics of Development
- 43.458★ International Aspects of Economic Development
- 43.461★ International Trade Theory and Policy
- 43.467★ Monetary Theory I
- 43.468★ Monetary Theory II
- 43.480 Research Seminar in Urban Economics

Geography

- 45.320★ The Canadian City: Environment, Structure and Contemporary Problems
- 45.433★ Urban Planning

Political Science

- 47.230 History of Political Thought
- 47.345★ Comparative Public Policy Analysis
- 47.366★ Canadian Foreign Policy
- 47.367★ Canadian Defence Policy
- 47.402★ Policy Seminar: Problems of Northern Development
- 47.413★ The State in Advanced Capitalist Societies

Law

- 51.301★ Women and the Legal Process (requires permission of the Department)
- 51.305★ Law and Regulation
- 51.353 Civil Liberties and Human Rights
- 51.354★ Law and Aboriginal Peoples of Canada
- 51.380 Law of Environmental Quality
- 51.467★ Immigration and Refugee Law

Sociology-Anthropology

- 53.380 Social Policy
- 53.373★ Criminal Justice Policy

Mention: français

Students proficient in French may wish to earn the University's "Mention: français" designation by taking the following pattern of courses in their degree program:

Students must undergo placement testing by the Department of French in order to satisfy the language requirement, and to protect the integrity of the initiative. At least 1.0 credit from the Second, Third or Fourth years must be made up by courses at Carleton.

First Year

1.0 credit in the advanced study of the French language (French 20.152 as a minimum standard; no equivalents can be substituted).

Second and Third Years

2.0 credits made up by Political Science 47.201, 47.390, or by Second-year courses given entirely in French on French Canadian culture and heritage (French 20.267★, 20.268★, 20.280★, 20.281★), or by other Second-year and Third-year courses offered entirely in French at Carleton or at another university and approved by the Undergraduate Supervisor of the School.

Fourth Year:

1.0 credit made up either by Public Administration 50.498 Honours Essay written in French, or by Third- or Fourth-year courses offered entirely in French at Carleton or at another university and approved by the Undergraduate Supervisor at the School.

Certificate in Public Service Studies

The Certificate program is designed primarily for public employees who seek special training in public service subjects at the undergraduate level.

Courses taken for the Certificate may be credited towards a Bachelor of Public Administration or Bachelor of Arts degree. A transfer student from the Certificate program into the Bachelor of Public Administration program will normally be required to take at least 14.0 further credits in addition to those required for the Certificate, to be recommended for the degree. A transfer student into a Bachelor of Arts program will normally be required to take at least 9.0 further credits. At least 5.0 of the credits required for either degree must be completed after the awarding of the Certificate.

Full-time candidates for the Certificate are invited to enquire about possible financial aid.

Admission Requirements

The basic admission requirement is the completion of the OSSD including six OACs or equivalent, with an overall average of 60 percent or better. Special consideration will be extended to other applicants under Mature Applicant regulations (see p. 36).

Candidates may be admitted with advanced standing, but must complete at least 4.0 credits, including all core courses, for the Certificate at Carleton University.

Students who have completed an undergraduate degree are not eligible for admission to the Certificate program. They are encouraged, however, to investigate the undergraduate and graduate degree and diploma programs offered by the School.

Course Requirements

The following courses are required and the following order is suggested:

1. Political Science 47.100
2. Economics 43.100
3. History 24.130 or 24.233 or 24.234 or 24.235
4. Political Science 47.200
5. Political Science 47.240
6. 1.0 other credit chosen in consultation with the Director according to the needs of the student.

Academic Standing

A candidate for the Certificate must obtain a grade of C or better in at least half of the credits taken at Carleton University for the certificate.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Public Administration 50.301 ★**Policy Analysis for Public Administration**

A multi-disciplinary seminar that involves the participation of several faculty members. It explores various theoretical approaches for analyzing the origins and effects of problems in public policy, and evaluating alternative responses to those problems.

Prerequisite: Third-year standing in Public Administration.

Seminar three hours a week.

Public Administration 50.340 ★**Introduction to Public Administration and Public Policy**

An introduction to the theoretical and empirical foundations of the fields of public administration and public policy at federal, provincial and municipal levels.

Precludes additional credit for Political Science 47.240.

Prerequisites: Political Science 47.200 and Third-year standing in Public Administration or an appropriate level in the CPSS Program.

Lectures and discussion three hours a week.

Public Administration 50.401 ★**Selected Topics in Public Administration**

A seminar that provides an opportunity for interaction between students and faculty directed toward examining current issues in Public Administration.

Prerequisite: Public Administration 50.301 ★.

Seminar three hours a week.

Public Administration 50.498**Honours Essay**

Tutorial hours arranged.

(Arts)

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Academic Administration

Chair
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Supervisor of Graduate Studies
J.P. Dourley

Supervisor of Honours Studies
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Professors
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Stephen G. Wilson

Associate Professors
Nalini Devdas
Leonard Librande
Joseph G. Ramisch
Eugene Rothman

Adjunct Professors
H.V. Dehejia
S. Kelly

General Information

The general purpose of courses offered in this Department is to promote a sensitive and intellectually mature understanding of the basic ideas and concerns of outstanding religious leaders and movements irrespective of whether these coincide or conflict with individual convictions. Religious writings are studied critically, in an attempt to understand their meaning, to grapple with their problems and to assess their significance both in their original cultural context and for our own situation.

Programs of Study

Students who elect Religion as their Pass or Honours subject will consult with their respective departmental adviser before registration each year.

Main Areas of Study

Religion courses are offered in three main areas:

1. Philosophical-Theological Studies of Religion: Religion 34.122, 34.203★, 34.235, 34.238★, 34.243, 34.260, 34.265★, 34.266★, 34.280, 34.303★, 34.304★, 34.305★, 34.325★, 34.332★, 34.488★.
2. History of Religion: Jewish and Christian Traditions: Religion 34.102★, 34.103★, 34.107★, 34.108★, 34.219, 34.225, 34.270, 34.271★, 34.272★, 34.273★, 34.321★, 34.323, 34.330, 34.338★, 34.355★, 34.378★, 34.486★.
3. History of Religion: Other Religious Traditions: Religion 34.105★, 34.106★, 34.109★, 34.206★, 34.208★, 34.209★, 34.210★, 34.211★, 34.212★, 34.230★, 34.231★, 34.274, 34.278, 34.320★, 34.342★, 34.484★.

For classification of Religion 34.125, 34.237★, 34.331★, 34.336★, 34.390, 34.391★ and 34.392 each year, consult the Program Adviser.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Pass Programs

A Pass program requires 6.0 credits in Religion, including 34.331★ and one other credit at the 300-level or above. Of these 6.0 credits, at least 1.0 must be in each of the three main areas of study as set forth above. Courses must be selected in consultation with the Pass Adviser.

Combined Pass Programs

A Pass program combining Religion with another subject must include at least 5.0 credits in Religion, including 34.331★. Of these 5.0 credits, there must be at least 0.5 credit in each of the three main areas of study as set forth above. Courses must be selected in consultation with the Pass Adviser.

Honours Programs

Honours in Religion

The Honours program may be entered at the beginning of the First year or in later years or by transfer from the Pass program.

The Honours program requires 10.0 credits in Religion. In addition to fulfilling the requirements for the Pass program, students must include at least 2.0 credits at the 400-level, that is, 34.498 or seminars

equivalent to 2.0 credits. Courses must be selected in consultation with the Honours Adviser.

Combined Honours Program

The Combined Honours program requires 7.0 credits in Religion. In addition to fulfilling the requirements for the Pass program, students must include at least 1.0 credit at the 400-level, that is, 34.499 or seminars equivalent to 1.0 credit. Courses must be selected in consultation with the Honours Adviser.

Combined Honours in Philosophy and Religion

Philosophy: At least 7.0 credits including:

1. an introductory course or equivalent;
2. 6.0 credits beyond the 100-level including:
 - (a) 2.0 credits in history of philosophy;
 - (b) Philosophy 32.260, or if taken already as Religion 34.260 or if not available, 1.0 credit in philosophical problems, selected in consultation with the Honours Adviser;
 - (c) 1.0 credit at the 400-level.

Religion: Requirements are those listed above for the Combined Honours program.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Note:

When possible, Religion 34.102★ and 34.103★ are so scheduled as to allow the student to take one of them in each term in the same time slot.

Religion 34.102★

Introduction to the Literature of the Hebrew Bible (Old Testament)

An examination of the books of the Hebrew Bible. Emphasis is given to literary approaches to the text, that is, to the kind of disciplined attention that has illuminated the manifold examples of world literature through a variety of critical approaches.

Precludes additional credit for Religion 34.120 (no longer offered).

Lecture three hours a week.

Religion 34.103★

The History and Literature of Early Christianity

An introduction to the rise of the Christian movement as revealed in the New Testament and other early evidence. Topics will include the Hellenistic and Jewish context, Jesus, Paul, Jewish Christianity, the Johannine writings, feminist and sociological approaches to the early church.

Students taking this course are also encouraged to take Religion 34.102★.

Precludes additional credit for Religion 34.120 (no longer offered).

Lecture three hours a week.

Note:

When possible, Religion 34.105★ and 34.106★ are so scheduled as to allow the student to take one of them in each term in the same time slot.

Religion 34.105★

Introduction to the Hindu Tradition

An introduction to the basic beliefs, myths and symbols, methods of meditation and ethical principles developed in the main branches of the Hindu tradition. The study includes a survey of movements stemming from the Hindu tradition such as Transcendental Meditation and Krishna Consciousness.

Lecture three hours a week.

Religion 34.106★

Introduction to the Buddhist Tradition

An introduction to the basic beliefs and practices of the Buddhist tradition and a brief survey of its developments and transformations in India, Sri Lanka, Southeast Asia, Tibet, China and Japan.

Lecture three hours a week.

Religion 34.107★

Christianity

An introduction to Christian thought, Catholic and Protestant, concerning such major issues as the character of God, the role of Christ and the Church, the authority of the Bible, human nature and destiny, the ecumenical and charismatic movements, the ordination of women, and the impact of secular culture.

Lecture three hours a week.

Religion 34.108★

Introduction to Judaism and the Jewish People

An introduction to Judaism and the Jewish people from the earliest times until the present day. Special emphasis is placed on the history of the Jewish people in the rabbinic age, Jews in the Muslim world, the medieval era, and in the modern era in Europe, North America and Israel. The course also deals with the organization, basic beliefs, social and ethical practices of the Jews and Judaism.

Lecture three hours a week.

Religion 34.109★

Introduction to Islam

An introduction to the Muslim religious tradition and investigation of its organization, basic beliefs, social and ethical principles and practices.

Lecture three hours a week.

Religion 34.122

Introduction to the Psychology of Religion

An introduction to the psychology of religion, which examines the major contributions of psychology to the study of religion, religious experience, and the religious personality through various individuals and schools such as those of James, Freud, Jung, Fromm, Erickson and Maslow.

Precludes additional credit for Religion 34.112★ (no longer offered).

Lecture three hours a week.

Religion 34.125

Interpretations of Religion

This course surveys modern enquiries into the nature of religion from various perspectives such as anthropology, history, psychology, sociology and theology. Contrasting views of self, society, nature, God, his-

tory and ultimate destiny conveyed by the myths, symbols, scriptures, doctrines, codes and rituals of religious traditions are examined. Specialists within the Department lecture on specific religious traditions.

Precludes additional credit for Religion 34.202 (no longer offered).

Lecture three hours a week.

Religion 34.203★

Women in the Christian Tradition

An examination of the status of women in Christianity, including such themes as images of women and gender roles in churches, recent feminist theologies, practical questions such as inclusive language and the ordination of women, and alternative approaches to Christian spirituality.

Lecture and discussion three hours a week.

Religion 34.206★

The Hindu Tradition: The Formative Period

A historical survey of the formation of the Hindu scriptures, the development of basic philosophic concepts and the establishment of the Shiva, Vishnu and Goddess traditions. Discussions of Hindu practices of meditation and presentations of Hindu religious art are included.

Prerequisite: Second-year standing.

Lecture and discussion three hours a week.

Religion 34.208★

The Hindu Tradition: The Period of Maturation and Responses to Modernity

This historical survey emphasizes the development of the non-dualistic and Theistic systems of Vedanta, and includes the reinterpretations of Hindu thought by modern thinkers in response to social and political changes.

Prerequisite: Religion 34.105★ or 34.206★, or permission of the Department.

Lecture and discussion three hours a week.

Religion 34.209★

Theravada Buddhism in South and South East Asia

A survey of the philosophic and psychological concepts and the techniques of meditation developed in the Theravada Buddhist tradition; an introduction to early Buddhist art; a consideration of Theravada Buddhist attitudes to modern social issues.

Lecture and discussion three hours a week.

Religion 34.210★

Mahayana Buddhism

A survey of the philosophic and psychological concepts and the techniques of meditation developed in Indian Mahayana Buddhism; an introduction to the development of Mahayana Buddhist concepts in Pure Land Buddhism, Zen Buddhism and Tibetan Tantra; a discussion of symbols in Mahayana Buddhist art; a consideration of Mahayana Buddhist responses to modern social issues.

Prerequisite: Religion 34.106★ or 34.209★ or permission of the Department.

Lecture and discussion three hours a week.

Religion 34.211★

Ancient Near Eastern Religions

An investigation of selected writings in English translation from Egypt, Mesopotamia, and Israel. The

writings studied include narrative, myths, wisdom literature, hymns and poetry. Major themes of this literature include: the world of the gods; the creation of the universe; friendship; the inevitability of death; how to succeed in business and life.

Lecture and discussion three hours a week.

Religion 34.212★

Graeco-Roman Religions

A study of selected topics in Graeco-Roman religion, such as Homeric religion, chthonic cults, the Sophists, astrology, ruler cults, mystery religions and gnosticism.

Lecture and discussion three hours a week.

Religion 34.219

Life, Thought and Wisdom in Ancient Israel

An examination of the major methods used by scholars in studying the Hebrew Bible (i.e., source criticism, form criticism, and tradition history) and how these relate to new approaches such as literary or structural analysis. Topics include creation and myth, Israel's patriarchs, the exodus from Egypt, revelation at Sinai, the occupation of Canaan, tensions between religious faith and personal experience, God and the presence of suffering in the world, rules for success in life and business, the religious sceptic, the problems of suicide and the delights of human love.

Lecture and discussion three hours a week.

Religion 34.225

The Life and Teaching of Jesus

The course is concerned with a systematic study of the available records of the life of Jesus. Class periods are mainly taken up with free class discussions of successive sections of the gospel parallels of Matthew, Mark and Luke. There are accompanying lectures and readings on the historical context of the life of Jesus and on the milieu within which the records developed.

Lecture and discussion three hours a week.

Religion 34.230★

Mysticism

A historical and functional study of mystical experience in its religious context, relying on examples from selected traditions such as the Christian, Buddhist, Hindu, Jewish and Muslim.

Precludes additional credit for Religion 34.230 (no longer offered).

Lecture and discussion three hours a week.

Religion 34.231★

Selected Topics in the Study of Mysticism

Contents of this course may vary from year to year.

Lecture and discussion three hours a week.

Religion 34.235

Religion and Contemporary Moral Issues

An analysis of the nature of religious ethics, both the explicit moral principles and rules of various religious traditions, and the general moral perspectives generated by religious images of ultimate reality, history, human nature and the physical world. In the light of this, contemporary moral issues such as the following are examined: cultural integrity (e.g., Indian, Inuit, Québécois), violent liberation and just war, crime and punishment, sexuality, role of men and women, marriage, abortion, alienation in modern society, drugs,

economic order and conflict, ecology and pollution.
Prerequisite: Any other Religion course or permission of the Department.

Lecture and discussion three hours a week.

Religion 34.237★

Selected Topics in Religion

Contents of this course vary from year to year.

Topic for 1996-97: Search for Meaning in The Great Religion of the World. A survey of some of the great religions of the world including Hinduism, Buddhism, Judaism, Christianity and Islam. The intention is, in the first place to become acquainted with factual and historical material like scripture, beliefs, institutions, worship and moral codes. Secondly, the aim is to grasp the personal meaning of this historical data for the devotees. How is the identity of religious persons created by an expressed in the symbols of their traditions? The course makes use of the BBC films, *The Long Search*.

Lecture and discussion three hours a week.

Religion 34.238★

Death and Afterlife

The meaning of death and afterlife in some religious traditions and secular philosophies with emphasis on the Hindu teaching of the immortal soul; the Hebraic idea of collective survival; the Christian doctrine of resurrection of the body; the Buddhist conception of no-soul and nirvana.

Lecture and discussion three hours a week.

Religion 34.243

Religion and Society

Offered in the Department of Sociology and Anthropology as Sociology-Anthropology 56.243.

Lecture and discussion three hours a week.

Religion 34.260

Philosophy of Religion

Offered in the Department of Philosophy as Philosophy 32.260.

Lecture and discussion three hours a week.

Religion 34.265★

Historic Figures in the Psychology of Religion

Discussion of religiously significant texts from the works of William James, Sigmund Freud and C.G. Jung.

Prerequisite: Second-year standing or permission of the Department.

Lecture and discussion three hours a week.

Religion 34.266★

Contemporary Psychologies of Religion

An examination of developmental, experimental, humanistic and existential theories in psychology as these shed light on religious thought, behaviour and institutions.

Prerequisite: Second-year standing or permission of the Department.

Lecture and discussion three hours a week.

Religion 34.270

The Development of Christian Thought

The historical and cultural development of selected aspects of Christian thought from its origins to the modern period. Problems considered are the early shift from a semitic to a hellenistic culture; the begin-

nings of the church as an institution; the development of thinking about Jesus in the early councils; conciliarism and other theories on the nature of the church; medieval efforts at reform; issues in the Protestant Reformation and its aftermath. Analysis of the way change and development have taken place in Christianity is also included.

Prerequisite: One course in Religion.

Lecture and discussion three hours a week.

Religion 34.271★

Judaism and the Jewish People: The Early Period

A study of the history of Judaism and the Jewish people from the Maccabees to the Rabbinic Age. Attention is given to the rise of sectarian movements (Pharisees, Saducees and Qumran Covenanters), the rise of Christianity, revolutionaries such as the Zealots and Bar Kochba, the Jewish responses to Hellenism, the reshaping of Judaism after the destruction of the Second Temple, and Rabbinic Judaism in Palestine and the Diaspora.

Lecture and discussion three hours a week.

Religion 34.272★

Judaism and the Jewish People: Survival in Medieval Europe

Jewish life in the medieval world, from the Crusades until the French Revolution, with emphasis on the evolution, structure and organization of the Jewish community in the Ghetto, religious movements such as mysticism, the false messiahs, and the rise of the Jewish Enlightenment and Hasidism, and Christian-Jewish relations.

Lecture and discussion three hours a week.

Religion 34.273★

Judaism and the Jewish People: The Challenge of the Modern Age

The response of the Jews and Judaism to the challenges of modernity: the French Revolution and Emancipation; the spread of the Jewish Enlightenment; the religious reaction; Reform and Conservative Judaism; secular ideologies, nationalism and Zionism; the growth of the Jewish community in North America; anti-semitism and the Holocaust; and the emergence of the State of Israel.

Lecture and discussion three hours a week.

Religion 34.274

The Formative Periods of Islam

A study of one major period in the development of Islam: (1) *The Classical Period (610-1258)*, study of the transformation of an Arab sect into a universal religious community dominating an empire and of the factors which made it a successful religious culture; or (2) *The Medieval Period (1258-1798)*, study of the consolidation of the religious and cultural dimensions of the Muslim community in the period of the great empires.

Lecture and discussion three hours a week.

Religion 34.278

The Middle East: 1798 to the Present

The history of the development of the civilization and culture of the Middle East from 1798 to the present with special emphasis on the mutual discovery of East and West, the search for identity, the impact of

colonialism and international rivalry, and social, religious and cultural change within a continuing tradition. (Also listed as History 24.278.)

Lecture and discussion three hours a week.

Religion 34.280

Modern Religious Thought

An examination of the major currents and developments of religious and philosophical thought among Protestants and Catholics in the nineteenth and twentieth centuries. Protestant developments are traced from the Kantian critique to the present and Catholic thought from its response to the French Revolution up to and beyond Vatican II.

Prerequisite: One course in Religion or Philosophy.

Lecture and discussion three hours a week.

Religion 34.303★

Paul Tillich and the Divine-Human Relation

The course examines Tillich's conception of God as Ground of Being and Depth of Reason, drawing on selections from his essays, lesser works and *Systematic Theology*.

Precludes additional credit for Religion 34.306 (no longer offered).

Lecture and discussion three hours a week.

Religion 34.304★

Teilhard de Chardin: Christianity and Evolution

The course examines Teilhard's correlation of a Christian with an evolutionary perspective from his early writings (First World War) through to his late synoptic essays.

Precludes additional credit for Religion 34.306 (no longer offered).

Lecture and discussion three hours a week.

Religion 34.305★

C.G. Jung and the Psychology of Religion

The course examines Jung's major statements in the *Collected Works* about the psycho genesis of religion and the implications this has for the understanding of humanity as religious.

Precludes additional credit for Religion 34.306 (no longer offered).

Lecture and discussion three hours a week.

Religion 34.320★

Selected Topics in Indian Thought

Contents of this course vary from year to year.

Prerequisite: One course in Buddhism.

Lecture and discussion three hours a week.

Religion 34.321★

Selected Topics in Hebrew Bible

Contents of this course vary from year to year.

Lecture and discussion three hours a week.

Religion 34.323

Religion and the State, Europe 1815-1965

Offered in the Department of History as History 24.323.

Lecture and discussion three hours a week.

Religion 34.325★

Selected Topics of Women in Religion

Descriptive and critical analysis of perspectives on women, sex, and gender in selected religious tradi-

tions. Contents of this course may vary from year to year.

Prerequisite: Second-year standing or better.

Lecture and discussion three hours a week.

Religion 34.330

The Life and Thought of Paul

Paul's relation to the Old Testament, Rabbinic Judaism, and Hellenism; the mission to the Gentiles; the "mysticism" of Paul; central ideas such as justification by faith, predestination, the Holy Spirit, the Church. Consideration of the situation and message of each of Paul's writings.

Prerequisite: Second-year standing or better.

Lecture and discussion three hours a week.

Religion 34.331★

Theory and Method in the Study of Religion

Examination of selected theoretical and methodological models used in the interpretation of religious data.

Contents of this course vary from year to year.

Prerequisite: Second-year standing or better.

Lecture and discussion three hours a week.

Religion 34.332★

Studies on Christianity

Selected problems in the study of the Christian religion.

Prerequisite: One course in Religion.

Lecture and discussion three hours a week.

Religion 34.336★

Selected Topics in Religion

Contents of this course may vary from year to year.

Prerequisite: Second-year standing or better.

Lecture and discussion three hours a week.

Religion 34.338★

Selected Topics in Early Christian History

Contents of this course vary from year to year.

Prerequisite: Second-year standing or better.

Lecture and discussion three hours a week.

Religion 34.342★

Selected Topics in Islam

Contents of this course vary from year to year.

Prerequisite: Second-year standing or better.

Lecture and discussion three hours a week.

Religion 34.355★

Selected Topics in Judaism and Jewish History

Contents of this course may vary from year to year.

Topic for 1996-97: *Modern Israel*. Examination of modern Israel, its origins, state, society and culture. Special emphasis is placed on Israel's different ethnic, cultural and religious communities and their relationships with communities and states outside the country.

Prerequisite: Second-year or higher standing.

Seminar three hours a week.

Lecture and discussion three hours a week.

Religion 34.378★

The Reformation Era in European History, 1409-1648

Offered in the Department of History as History 24.378★.

Lecture and discussion three hours a week.

Religion 34.390**Selected Problems in Interpretation**

A course conducted on a tutorial or seminar basis designed to enable advanced students to pursue interests in selected areas of religion.

Prerequisite: Permission of the Department.

Tutorial/seminar three hours a week.

Lecture and discussion three hours a week.

Religion 34.391 ★**Selected Problems in Interpretation**

A course conducted on a tutorial or seminar basis designed to enable advanced students to pursue interests in selected areas of religion.

Prerequisite: Permission of the Department.

Tutorial/seminar three hours a week.

Lecture and discussion three hours a week.

Religion 34.484 ★**Seminar in Comparative Religion**

Seminar three hours a week.

Religion 34.486 ★**Seminar in Biblical and Ancient Near Eastern Studies**

Contents of this course may vary from year to year. Also offered at the graduate level, with additional or different requirements, as Religion 34.520F1 for which additional credit is precluded. (Also listed as Comparative Literary Studies 17.582). The quality and quantity of work expected of students enrolled at the 500-level will be greater than for those enrolled at the 400-level.

Seminar three hours a week.

Religion 34.488 ★**Seminar in Modern Religious Thought and Culture**

Contents of this course vary from year to year. Topic for 1996-97: Section A: Jung and Mystical Experience. The seminar will examine Jung's hermeneutic of mystical experience and his treatment of such specific mystics as Mechthilde of Magdeburg, (extended to Hadejwich of Antwerp), Meister Eckhart and Magdeburg, (extended to Hadejwiche or Antwerp), Meister Eckhart and Jacob Boehme.

Section B: The Impact of Feminist Research on the Study of Religion. The seminar will explore the diverse contributions feminist theory and practice have made to the study of religion during the past two decades. From early question about content and focus, to later more fundamental paradigm shifts in method and theory, feminist work will be examined, and the impact it has had upon the sub-disciplines of religious studies will be assessed.

Seminar three hours a week.

Religion 34.498 (2.0 credits)**Honours Essay**

Open to candidates for Honours in Religion in their Fourth year, with the permission of the Department. The subject for research is settled in consultation with a Departmental Director. A written proposal consisting of title, outline and bibliography must be submitted to and approved by the Honours Essay Proposal Board. The essay will be a substantial piece of work of approximately 16,000 words. The essay is jointly evaluated on its completion by the Departmental Director and one other member of the department.

Precludes additional credit for Religion 34.499. (Consult Departmental Document for further details.)

Seminar three hours a week.

Religion 34.499**Honours Essay**

Open to candidates for Combined Honours in Religion in their Fourth year with permission of the Department. The subject for research is settled in consultation with a Departmental Director. A written proposal consisting of title, outline and bibliography must be submitted to and approved by the Honours Essay Proposal Board. The essay will be a substantial piece of work of approximately 10,000 words. The essay is jointly evaluated on its completion by the Departmental Director and one other member of the Department.

Precludes additional credit for Religion 34.498. (Consult Departmental Document for further details.)

Seminar three hours a week.

- Language Courses**

Language courses are intended for students specializing in a particular religious tradition. They are offered according to the availability of members of the Department. Courses taken at the 200-level or above will be mainly independent study under the supervision of a member of the Department. Students interested in taking these courses should consult the Department chair.

Religion 34.115**Introduction to Hebrew**

An introduction to Hebrew with emphasis on reading comprehension. A study of the prose language of the Hebrew Bible in its basic vocabulary and grammar. Restricted to beginners in the language. When this course is not offered, students are encouraged to consider taking Hebrew 23.150, Modern Spoken Hebrew, offered by the Centre for Applied Language Studies. (See p. 118.) Restricted to Religion Pass and Honours students.

Prerequisite: Permission of the Department.

Religion 34.116**Introduction to Classical Arabic**

An introduction to the forms, grammar, and syntax of the classical Arabic language employed in the Qur'an and by Muslim scholars from the seventh to the fourteenth century. The course is restricted to beginners. Restricted to Religion Pass and Honours students.

Prerequisite: Permission of the Department.

Religion 34.117**Introduction to Sanskrit**

Introduction to the fundamentals of the language with emphasis on reading and writing skills. Restricted to Religion Pass and Honours students.

Prerequisite: Permission of the Department.

Religion 34.215**Intermediate Hebrew**

Readings in classical biblical Hebrew with emphasis on the grammatical structure and vocabulary of its prose language. Restricted to Religion Pass and

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Honours students.

Prerequisites: The appropriate 100-level language course and permission of the Department.

Religion 34.216

Intermediate Classical Arabic

Second-level study of classical Arabic grammar and style with the help of readings and exercises. Restricted to Religion Pass and Honours students.

Prerequisites: The appropriate 100-level language course and permission of the Department.

Religion 34.217

Readings in Sanskrit Literature

A study of selected readings from early Hindu literature. Restricted to Religion Pass and Honours students.

Prerequisites: Religion 34.117 and permission of the Department.

Religion 34.218

New Testament Greek

A study of the form and content of prescribed readings from the New Testament in Greek with guidance in translation and exegesis. Restricted to Religion Pass and Honours students.

Prerequisites: The appropriate 100-level language course and permission of the Department.

Religion 34.392

Language Tutorial

An advanced study of a language in which one of the religious traditions has been transmitted. Restricted to Religion Pass and Honours students.

Prerequisite: Permission of the Department.

(Arts)

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M. Sabanadze

Adjunct Professors
A. Donskov
P. Vamai

The Russian Program

The Department of Russian offers a flexible undergraduate program. It has been designed to satisfy a range of different academic and professional interests. Courses are offered in the areas of Russian literature, Russian language and linguistics (including an option for translation training), and Soviet period studies. Details of each degree program are listed below. The Department also offers special-interest courses and tutorials in the areas of literature in translation, business Russian, applied Russian for international relations, Ukrainian and other Slavic languages, and Hungarian.

The minimum credit requirements for a degree in Russian, after the completion of Russian 36.100 or the equivalent, are as follows: Pass, 6.0; Combined Pass, 5.0; Honours, 9.0; Combined Honours, 7.0.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Pass Programs

The minimum requirements for the Pass degree in Russian, after the completion of Russian 36.100,

include Russian 36.201★, 36.202, 36.203, 36.205★, 36.260, 36.302 and 1.0 additional credit beyond the 100-level. Russian 36.260 should be taken concurrently with 36.202.

The minimum requirements for the Combined Pass degree, after the completion of Russian 36.100 include Russian 36.201★, 36.202, 36.203, 36.205★, 36.260, 36.302. Russian 36.260 should be taken concurrently with 36.202.

Intensive Russian 36.120 is counted as the equivalent of Russian 36.100 and 36.202, but cannot be taken in addition to either Russian 36.100 or 36.202.

Honours Programs

Students should plan their program in accordance with their interests and their needs and in consultation with the Department.

The minimum requirements for the Honours degree in Russian, after the completion of Russian 36.100, include Russian 36.201★, 36.202, 36.203, 36.205★, 36.260, 36.301★, 36.302, 36.305★, 36.307★, 36.308★, 36.407 or 36.409 and 1.0 additional credit at the 400-level.

The minimum requirements for the Combined Honours degree, after the completion of Russian 36.100, include Russian 36.201★, 36.202, 36.203, 36.205★, 36.260, 36.301★, 36.302, 36.305★, 36.407 or 36.409.

Intensive Russian 36.120 is counted as the equivalent of Russian 36.100 and 36.202, but cannot be taken in addition to either Russian 36.100 or 36.202.

Combined Honours programs are possible with a number of other disciplines, among them History, Political Science, Journalism, English, French, Italian, German, Spanish and Linguistics. The Department also participates in the Comparative Literary Studies program, and in the Institute of Central/East European and Russian-Area Studies.

Combined Honours in Russian and Linguistics and Applied Language Studies, Translation Option

A special Combined Honours program is available to students contemplating a career in Russian to English translation. In this program, the following courses are required:

Linguistics

- 29.100 Introduction to Linguistics
- 29.201★ Phonetics
- 29.203★ Language Analysis
- 29.304★ Grammatical Theory
- 29.481★ Major Structures of English
- 29.482★ Language Contact and Language Spread
- 29.490 Tutorial in Linguistics. Tutorial consists obligatorily of directed readings in the theory of translation.

Russian

- 36.120 Intensive Russian, or
- 36.202 Intermediate Russian

- 36.203 Russian Grammar
- 36.302 Advanced Russian
- 36.307★ Russian Syntax
- 36.308★ Russian Translation
- 36.410★ Russian Style and Composition I
- 36.411★ Russian Style and Composition II
- 36.495★ Tutorial. For students in this program a practicum in translation, with analysis and criticism of selected professional translations.
- 36.499 Honours Essay. For students in this program, an annotated translation of a substantial piece of text, with oral defence before a panel consisting of a member of the Department of Russian, a member of the Department of Linguistics and Applied Language Studies, and a professional translator.

French

At least a 100-level credit.

At least 5.0 remaining credits shall be chosen from offerings in the following areas: Mass Communication (27.111 Introduction to Mass Communication), Business (Accounting), Economics, Geography, Political Science, Law, Sociology-Anthropology, Biology, Chemistry, Geology, Physics, Computer Science, French (above the 100-level). Russian literature courses may also be selected.

Departmental Tutorial Program

Students with advanced or specialized interests in Russian and Slavic studies should examine the tutorials offered by the Department in the areas of literary and language study. These tutorials allow individual or small group study of particular interests for which there is a demand. Enquiries should be directed to the Department or to individual faculty members.

Special Interest Courses

1. *Business Russian*: The Department offers a special course to students interested in Business, Business Russian 36.220. This is a full-credit course in which students will acquire basic grammatical knowledge, understanding and minimal vocabulary necessary to be introduced to the world of Russian business language.
2. *Russian for International Relations*: The Department offers two Fourth-year half-credit courses in Russian for International Relations, 36.420★ and 36.421★, to assist interested students in the acquisition of the linguistic knowledge, terminology and language skills needed for international transactions. In addition to reading, translating and writing, there is discussion of various documents and of material from the Russian press.
3. *Russian Literature Courses in English Translation*: The Department offers one full-credit course, Russian 36.260, and two half-credits, Russian 36.360★ and 36.361★, in which Russian literary works are read and studied in English translations.

Conducted entirely in English, these courses are designed for all students wishing to broaden their knowledge of Russian literature and culture. The courses offer opportunities for both a comprehensive survey and a detailed examination of Russian authors.

4. *Other Slavic Languages*: The Department also offers additional optional credits in other Slavic languages:

(a) A basic sequence of Ukrainian 36.116 and 36.216 (beginning and advanced may be offered on request);

(b) Bulgarian with an introduction to Macedonian, Old Slavonic, and Serbo-Croat, may be offered on request. Hungarian is also offered.

5. *East-European Literature in English Translation*: The Department offers Russian 36.291★, Twentieth-Century East-European Literature in English Translation, as a survey of the recent literature of Czech Republic, Slovakia, Poland and Hungary. All texts are read in English translation. This course is centred around authors whose concerns extend beyond national boundaries, who are politically and socially revealing, and artistically innovative. The specific Calendar description should be consulted.

Laboratory Facilities

The University's language laboratory provides facilities for drill in aural comprehension. Students may take extra practice in periods in open hours. The language laboratory is used in the following courses: Russian 36.100, 36.120, 36.202, 36.220.

Departmental Reading Lists

Departmental reading lists will be available from the Administrative Assistant, 3A38 Paterson Hall (telephone 520-6646). These reading lists give additional information about courses, including texts, instructors and, as available, the scheduling of courses.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Russian 36.100

Introductory Russian

Introductory course, the aim of which is to ensure an adequate grasp of the mechanics of the language and basic skills in oral comprehension. Reading of texts. One hour a week devoted exclusively to Russian conversation in class. Oral practice in the language laboratory. Compulsory attendance for both classes and laboratory work.

Precludes additional credit for Russian 36.120.

Lecture four hours a week, laboratory one hour a week.

Russian 36.120

Intensive Russian

This course is designed to cover a basic two-year study of the Russian language in one year, and to provide a rapid and thorough grounding in how to read, write and speak Russian. Audio visual material is used to reinforce comprehension. Students not making satisfactory progress will be advised to transfer to Russian 36.100. Attendance in both classes and laboratory work is compulsory. No auditors.

Precludes additional credit for Russian 36.100 and 36.202.

Lecture seven hours a week, laboratory one hour a week.

Russian 36.201 ★

Spoken Russian

The course focuses on the oral practice of the vocabulary acquired so far, and should enable the students to communicate in simple terms in a range of everyday topics and social situations, and demonstrate their ability for simple narration or description. Prerequisite: Russian 36.100 or permission of the Department.

Note: It is recommended that the course is to be taken concurrently with Russian 36.202 (Intermediate Russian) or after its completion.

Lecture three hours a week.

Russian 36.202

Intermediate Russian

Continuation of the basic Russian sequence. Grammar studies, composition, oral drill, reading of selected poetry and prose. Compulsory attendance for both classes and laboratory work.

Precludes additional credit for Russian 36.120 and 36.220.

Prerequisite: Russian 36.100 or permission of the Department.

Lecture three hours a week, laboratory one hour a week.

Russian 36.203

Russian Grammar

A systematic review of Russian grammar taught in English. Word formation, and morphology, with special emphasis on the most difficult parts of Russian grammar for non-Russians.

Prerequisite: A grade of C or better in Russian 36.100 or permission of the Department.

Note: It is recommended that the course is to be taken concurrently with Russian 36.202 (Intermediate Russian) or after its completion.

Lecture three hours a week.

Russian 36.205 ★

Written Russian

A sequel to Russian 36.201 ★ emphasizing comprehension and self-expression in written Russian.

Prerequisite: Russian 36.201 ★ or permission of the Department.

Note: It is recommended that this course is to be taken concurrently with Russian 36.202 (Intermediate Russian) or after its completion.

Lecture three hours a week.

Russian 36.207

Introduction to Literary Reading

Intensive oral reading practice on the basis of Rus-

sian literary texts. Texts are used for various forms of study in class and at home.

Prerequisite: Russian 36.100 or permission of the Department.

Note: It is recommended that this course is to be taken concurrently with Russian 36.202 (Intermediate Russian) or after its completion.

Lecture three hours a week.

Russian 36.220

Business Russian

This course is designed for students interested in acquiring basic grammatical knowledge, comprehension and minimal vocabulary necessary for the introduction to Russian business language. The reading and writing material of the course is based on language of business and commerce.

Precludes additional credit for Russian 36.120 and 36.202.

Prerequisite: Russian 36.100.

Lecture three hours a week, laboratory one hour a week.

Russian 36.260

Russian Literature in English Translation — Nineteenth and Twentieth Centuries

A study of selected works of Russian literature in the general context of European literature and against their social and political background. It includes works by Pushkin, Gogol, Turgenev, Leo Tolstoy, Dostoevsky, Chekhov, Gorky, Bulgakov, Pasternak, Solzhenitsyn, etc.

Lecture two hours a week.

Russian 36.291 ★

Twentieth-Century East-European Literature in English Translation

This course focuses on the literature of three countries: Czech Republic, Slovakia, Hungary and Poland. Following an introduction to the pertinent literary traditions, representative twentieth-century works are treated in detail. Post-World War II developments receive further emphasis. All texts are read in English translations. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Lecture two hours a week.

Russian 36.301 ★

Advanced Spoken Russian

A sequel to Russian 36.201 ★.

Prerequisite: Russian 36.201 ★ or permission of the Department.

Lecture three hours a week.

Russian 36.302

Advanced Russian

Continuation of the basic Russian sequence. Introduction to prose composition and essay writing; further development of comprehension and self-expression in Russian. Compulsory attendance. Prerequisite: Russian 36.120 or 36.202 or permission of the Department.

Lecture three hours a week.

Russian 36.305 ★

Advanced Written Russian

A sequel to Russian 36.205 ★. Composition and essay writing in Russian.

Prerequisites: Russian 36.202, 36.205★ and 36.301★, or permission of the Department.
Lecture three hours a week.

Russian 36.307★

Russian Syntax

Fundamental concept of Russian syntax (the case system, government and agreement, subject-predicate differentiation) with extensive exercises.

Precludes additional credit for Russian 36.303 (no longer offered).

Prerequisites: Russian 36.202 and 36.203, or permission of the Department.

Lecture three hours a week.

Russian 36.308★

Russian Translation

A basic course focusing on the principles and practice of translation of literary and non-literary texts from Russian into English.

Precludes additional credit for Russian 36.303 (no longer offered).

Prerequisite: Russian 36.307★ or permission of the Department.

Lecture three hours a week.

Russian 36.360★

Special Topic: Dostoevsky to Chekhov (in English Translation)

Study of particular authors, movements or themes, concentrating on the work of Dostoevsky, Tolstoy and Chekhov. The specific course outline may vary from year to year, but it will regularly focus on the relation between imaginative writing and society. All texts are read in English. This course does not count as a credit in Russian but can serve as an Arts option for all students.

Prerequisite: At least Second-year standing or permission of the Department.

Lecture two hours a week.

Russian 36.361★

Special Topic: The Revolution and After (in English Translation)

Study of particular authors, movements or themes, concentrating on the period of the Revolution and its aftermath. The specific course outline may vary from year to year, but it will regularly focus on the relation between imaginative writing and society. All texts are read in English. This course does not count as a credit in Russian but can serve as an Arts option for all students.

Prerequisite: At least Second-year standing or permission of the Department.

Lecture two hours a week.

Russian 36.399

Introduction to Methods of Research

Tutorial on topics of Russian or comparative language and literature, aimed at training in methods of scholarly research and Slavic bibliography.

Prerequisites: A Russian course at the 300-level and permission of the Department.

Tutorial.

Russian 36.405

Tutorial: History of the Russian Language

A tutorial on the historical development of Russian from Old Slavic to the present, based on studies in

historical grammar and reading of selected medieval and modern texts. No auditors.

Prerequisites: Russian 36.203 and permission of the Department.

Tutorial.

Russian 36.407

Major Authors: Pushkin to Chekhov

A study of selected texts in Russian from major authors of the nineteenth century such as Pushkin, Gogol, Turgenev, Dostoevsky, Tolstoy and Chekhov. Emphasis is placed on the reading of literary texts in a historical context and on the artistic developments in poetry and fiction throughout the period.

Precludes additional credit for Russian 36.335 (no longer offered).

Prerequisites: A Russian course at the 300-level and permission of the Department.

Tutorial.

Russian 36.409

Major Authors: Gorky to Solzhenitsyn

A study of selected texts in Russian from authors of the twentieth century such as Gorky, Babel, Blok, Mayakovsky, Bulgakov, Zamyatin, Sholokhov and Solzhenitsyn. Emphasis is placed on the reading of literary texts in the context of political and social change and on the study of literary trends, themes and experiments.

Precludes additional credit for Russian 36.355 (no longer offered).

Prerequisites: A Russian course at the 300-level and permission of the Department.

Russian 36.410★

Russian Style and Composition I

Introduction to stylistics and expressive writing. Analysis of semantic and structural peculiarities of modern Russian. No auditors.

Precludes additional credit for Russian 36.304 (no longer offered) and 36.404.

Prerequisites: Russian 36.302 and permission of the Department.

Russian 36.411★

Russian Style and Composition II

A continuation of Russian 36.410★. No auditors.

Precludes additional credit for Russian 36.304 (no longer offered) and 36.404.

Prerequisites: Russian 36.410★ and permission of the Department.

Russian 36.420★

Russian for International Relations I

This course consists of reading, translation, discussion and writing in Russian of documents, reports and articles. Readings from the Russian Press are studied and insights are obtained into Russian organizations, Russian views of Canada, and political and commercial relations between Canada and Russia. No auditors.

Precludes additional credit for Russian 36.320★ (no longer offered).

Prerequisites: Russian 36.302, 36.307★ and 36.308★ or permission of the Department.

Lecture three hours a week.

Russian 36.421★**Russian for International Relations II**

A continuation of Russian 36.420★. No auditors.

Precludes additional credit for Russian 36.321★ (no longer offered).

Prerequisite: Russian 36.420★ or permission of the Department.

Lecture three hours a week.

Russian 36.435★**Tutorial: Special Topic (Literature)**

A tutorial offering advanced study of a literary topic in the area of literary history, criticism or theory, to be arranged in consultation with a member of the Department. No auditors.

Prerequisites: A Russian course at the 300-level and permission of the Department.

Tutorial.

Russian 36.445★**Tutorial: Special Topic (Drama)**

A tutorial offering concentrated study of a topic related to Russian dramatic literature and theatre, to be arranged in consultation with a member of the Department. No auditors.

Prerequisites: A Russian course at the 300-level and permission of the Department.

Tutorial.

Russian 36.455**Tutorial: Special Topic (Post-1917 Period)**

A tutorial offering study of a topic related to the literature of the Revolution and after, to be arranged in consultation with a member of the Department. No auditors.

Prerequisites: A Russian course at the 300-level and permission of the Department.

Russian 36.493★**Translation Tutorial I**

This course is intended for students in the Institute of Central/East European and Russian-Area Studies, although other students may enrol with the permission of the Department. It offers work in translation to and from Russian, and the objectives of the course are co-ordinated with the specific needs of students in the Institute. No auditors.

Prerequisites: A 300-level Russian language course or equivalent and permission of the Department.

Russian 36.494★**Translation Tutorial II**

A continuation of Russian 36.493★. No auditors.

Prerequisites: Russian 36.493★ and permission of the Department.

Russian 36.495★**Tutorial: Special Topic (Language)**

A tutorial on topics of language or linguistics, providing individual or small group study. For students in the Translation Option, it will be a practicum in translation with analysis and criticism of selected professional translations. No auditors.

Prerequisites: Russian 36.302 or 36.307★ and 36.308★ and permission of the Department.

Russian 36.496★**Tutorial: Special Subject**

A tutorial on a selected literary or language topic,

providing individual or small group study. No auditors. Prerequisites: A Russian course at the 400-level and permission of the Department.

Russian 36.499**Honours Research Project**

A course for independent research and writing under the supervision of a member of the Department, open to students in the Fourth year of Honours. The written assignment for the course is a substantial piece of work of approximately 8,000 words. It is graded by the supervisor in consultation with a second reader. A written statement, outlining the project and approved by the supervisor, must be submitted to the Chair of the Department by the last day for course changes. For students in the Translation Option the project consists of an annotated translation of a substantial piece of text, with an oral defence before a board consisting of a member of the Department of Russian, a member of the Department of Linguistics and Applied Language Studies and a professional translator.

- **Ukrainian**

Ukrainian 36.116**Introductory Ukrainian**

An introductory course designed to give students the fundamentals of written and spoken Ukrainian. Grammar, reading and oral practice. Language laboratory. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Lecture three hours a week, laboratory one hour a week.

Ukrainian 36.216**Advanced Ukrainian**

Grammar review, composition, advanced conversation. Reading of selected prose and poetry representing the most typical features of Ukrainian culture in the nineteenth and twentieth centuries. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Prerequisite: Ukrainian 36.116 or permission of the Department.

Lecture three hours a week, laboratory one hour a week.

- **Slavic and East-European Languages**

Slavic 36.390**Slavic Language Tutorial**

A study in a Slavic language, other than Russian, which may be useful for research information or translation activities at the graduate or undergraduate level. It includes written and oral exercises in class, as well as translation and reading assignments. Students wishing to study Ukrainian beyond the Ukrainian 36.216 level may enrol in this tutorial. The choice of the language depends on the availability of an instructor. This course does not count as a credit in Russian, but can serve as an Arts option for all students.

Prerequisite: Permission of the Department.

Slavic 36.392★

Hungarian Language Tutorial

This course is offered at the introductory or the advanced level, for both graduate or undergraduate students. It includes written and oral exercises in class, as well as translation and reading assignments. It does not count as a credit in Russian, but can serve as an Arts option for all students.

Prerequisite: Permission of the Department.

(Social Sciences)

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General Information

The Bachelor of Social Work Honours program combines a liberal arts education with professional preparation. The primary objective of the program is to provide students with the knowledge and skills necessary to begin entry level practice in social work.

The School's orientation places a strong emphasis on sensitivity to the individual and on the development of innovative strategies for working with people both individually and collectively. The School also stresses an awareness of and a capacity for analysis of the social policies and administrative practices that affect the lives of many people in our society. Analyses of class, gender and race relations are considered central to the program. The program's core courses and field practice are structured so that students develop first a broad understanding of societal forces and then skills in direct practice, social administration and policy.

The Carleton School of Social Work is committed to educational equity. The society in which we live and of which social work is a constituent part is composed of people distinguished by their differential access to power—economic, political, and social. The School affirms the principle that all people should have the opportunity to learn in a supportive environment. Educational equity applies, but is not limited to persons of aboriginal and racial, cultural, and/or ethnic minority origin; persons with disabilities; lesbian, gay and bisexual persons; and persons disadvantaged by their gender or economic position. Educational equity is consistent with a continuing commitment to meeting high standards of academic practice competence.

Educational equity both provides for social work education to people who would otherwise not have such an opportunity, and equally important, it brings into social work students whose life experiences enables them to challenge the accepted structure of social work itself.

Admission Requirements

This Calendar specifies the general conditions of entry that apply to all undergraduate programs. (See p. 31.)

For admission to First year of Social Work, there are two components of the admission standards:

1. The OSSD or the equivalent, with an average of 65 percent or better, including six OACs or the successful completion of Qualifying-University year.
2. Preference will be given to applicants with a minimum of one year human service work experience, which may be met by employment and/or volunteer experience. Each applicant is requested to complete a personal data information document, which will assist in the evaluation of their suitability for the program.

Consideration may be extended to other applicants under Mature Applicant regulations. (See p. 36.)

The number of student spaces in the School is limited; therefore, it may not be possible to grant admission to all applicants who meet the foregoing requirements.

Students who meet the Faculty of Social Sciences Honours continuation standards will be considered for transfer into the Second year of the B.S.W. program when spaces are available.

Students who have completed an undergraduate de-

gree are normally admitted into the program with Third-year standing. Students with Third-year standing are eligible to take Social Work 52.300, provided that they have not previously obtained credit for 52.100, 52.200, or 52.210★.

Residence Requirements

Students transferring from other institutions with advanced standing in Social Work must complete a minimum of 6.0 credits in the School of Social Work chosen from the core courses in years 3 and 4, and to include Social Work 52.460.

Equity Admissions

In the context of the admissions policy of Carleton University, the School of Social Work has an equity admissions policy that applies to candidates from groups that have been disadvantaged in respect to access to many social institutions in Canadian society. Educational equity applies to, but is not limited to, persons of aboriginal and racial, cultural, and/or ethnic minority origin; persons with disabilities; lesbian, gay and bisexual persons; and persons disadvantaged by their gender or economic position.

All students are required to meet the School of Social Work continuation standards and graduation requirements.

Work Experience and Credit for Field Practice I (52.360)

Students admitted to the Bachelor of Social Work program are eligible to apply to the B.S.W. Field Co-ordinator of the School of Social Work for credit for the 52.360, if they have:

1. a minimum of four years human service work experience; or
2. a minimum of two years work experience in an approved social service agency and a diploma in applied arts from a community college or an undergraduate degree from a university.

Challenge for Credit

The School of Social Work accepts challenge for credit on elective courses in the B.S.W. program (except for 52.309★, 52.319★, 52.429★, 52.490★ and 52.492★). Challenge for credit is not accepted for required B.S.W. courses. (See p. 47, Challenge for Credit.)

Graduate Program

The School of Social Work offers studies leading to the degree of Master of Social Work (M.S.W.). For

details of this program consult the School and the Calendar of the Faculty of Graduate Studies and Research.

Honours Program

Candidates whose first degree will be the Bachelor of Social Work take a total of 20.0 credits, a minimum of 9.5 Social Work credits and a minimum of 8.0 credits taken from outside the School of Social Work. The remaining 2.5 credits can be taken either inside the School of Social Work or outside as electives.

The School requirements for this degree are:

1. Social Work 52.100;
2. Social Work 52.200;
3. Social Work 52.210★, 52.310★;
4. Social Work 52.320★, 52.321★, 52.420★;
5. Social Work 52.360 (2.0 credits), 52.460 (2.0 credits) or both of 52.461 and 52.462;
6. Social work options, either 52.498 or two 0.5 credit courses in Social Work to be completed at the 400-level or higher;
7. a minimum of 8.0 credits outside the School of Social Work to include 1.0 credit in Psychology, and 1.0 credit in Sociology;
8. 2.5 additional credits may be either Social Work options or electives outside the School;
9. 1.0 credit of research is required. Social Work 52.250 is recommended. 1.0 credit in another approved research course may be substituted.

Candidates for the B.S.W who enter the program with Third-year Honours standing may be exempted from 52.100, 52.200, and 52.210★, however, they must obtain credit for Social Work 52.300 and all other required Social Work courses listed above.

Continuation in the B.S.W. Honours program requires that a student meet the relevant Faculty of Social Sciences regulations, which are found on p. 71.

Graduation from the B.S.W. Honours program requires a GPA of 6.5 or better over all graded Social Work courses counted towards the degree.

Students are strongly advised to consult with their faculty adviser and the Supervisor of Undergraduate Studies regularly throughout their degree studies to ensure that they are observing School and University requirements.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Social Work 52.100

Introduction to Social Work and Social Welfare

An overview of social work practice, principles and knowledge base, current social problems and related fields of practice. Attention is also given to the analysis of the relationship between social welfare and

Canadian society, and the interrelationship among social work practice, societal change, social problems and social programs.

Lecture three hours a week.

Social Work 52.200

Structural Analysis and Social Work

A general framework for the utilization of social science theory in social work practice is presented. Major contributions from individual and social psychology, and from social, political and economic theory are reviewed in the contexts of race, gender and class. The emphasis in one term is on race, and in the other term it focuses on gender and how they interrelate with class.

Prerequisites: Honours standing in the B.S.W. program and Social Work 52.100.

Lecture and discussion three hours a week.

Social Work 52.202★

Social Control and Deviance in Social Work

Theories of deviance and the structural contexts of deviant labelling and social control are explored in the context of social work practice. Students explore the implications of stigma in their lives and in the lives of those they serve.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.203★

Drugs in Society: Theory, Policy and Practice

An examination of the extent and nature of alcohol and other drug use, theoretical explanations of drug dependence, history of drug policy development and current federal and provincial drug strategies. Strategies for social work practice are outlined.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.204★

Human Sexuality

An overview of psychosocial and political issues surrounding human sexuality. Emphasis is placed on the influence of culture and the range of individual differences in sexual and reproductive attitudes, values and behaviour and to the particular concerns of various sexually oppressed groups. Attention is given to the inter-relatedness of sexual values and norms and social policy affecting sexual behaviour and the implications for social work practice.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.210★

The Political Economy of Social Welfare

History of welfare, theories of welfare, contemporary issues such as the nature of the labour market, the family, the voluntary sector, and the state as the institutions through which welfare is provided in contemporary society.

Prerequisites: Honours standing in the B.S.W. program and Social Work 52.100.

Lecture and discussion three hours a week.

Social Work 52.211★

Poverty and Social Policy

The purpose of this course is to acquaint students with: (i) studies of poverty and the distribution of income and wealth in Canada; (ii) explorations of the origins and persistence of inequality of income and wealth; (iii) social policies and poverty. The orientation of the course is both descriptive and analytic.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.212★

Housing Policy

This course is intended to provide an introduction to modes of analysis of housing and policy, to current Canadian housing programs and policies, and to contemporary issues in policy analysis. An examination of the housing conditions of the Canadian population is the starting point.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.221★

Working with Children and Youth

This course examines preventative and protective social work intervention with children and youth, analyzing the problems involved in neglect, violence and abuse, crises, wardship, "taking-into-care", and problem behaviours, in the context of the epigenetic stages of maturation, the family in its diverse forms, and the social-political context in Canada.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.250

Research Methods in Social Work

This course provides an introduction to research methods for social workers. Through the consideration of problems and questions in social work a range of methods and designs will be addressed. The course provides students with information to become competent consumers of social work research as well as participants in social work research processes. The course will cover quantitative and qualitative methodologies. Lectures will be three hours per week over two terms.

Precludes additional credit for Social Work 52.350★ (no longer offered).

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Social Work 52.300

Foundations of Structural Analysis, Social Welfare and Social Work

This course introduces students to the history and contemporary nature of social work, social welfare policy and social services in Canada. Students will examine the interactions between personal and social problems, political and state organization, households, and the economy. This course is intended for students in the B.S.W. who have already completed an undergraduate degree in another program. The

course presumes that students are familiar with the major concepts and theories in social sciences and that they have developed analytic abilities. Precludes additional credit for Social Work 52.100, 52.200, 52.210★. Prerequisites: Third-year Honours standing upon admission to the B.S.W. and permission of the School of Social Work.

Social Work 52.309★ 52.319★, 52.429★

Special Topics in Social Work

Special topics in Social Work focus on theory, policy or direct practice that is not ordinarily treated in the regular course program. The choice of topics varies from year to year and is announced well in advance of the period of registration.

Precludes additional credit for Social Work 52.329 (no longer offered).

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work. Lecture and discussion three hours a week.

Social Work 52.310★

Social Administration and Policy

Social Work has two general forms of practice: Intervention with individuals, families and communities; and administration, management, social research and social planning. This latter form of practice is the subject of this course. The course focuses on the theory and practice of the welfare state and social policy, the structure and administration of the major social programs, and on social administration as a field of study and as a form of practice.

Precludes additional credit for Social Work 52.410★ (no longer offered).

Prerequisites: Honours standing in the B.S.W. program and Social Work 52.100, 52.210★, and 52.200; or 52.300, (which may be taken concurrently).

Social Work 52.311★

Race and Social Policy

The purpose of this course is to introduce students to: (i) race analysis of social welfare issues and social policy; and (ii) an overview of the theoretical approaches to the study of racism in Canadian society and specifically in the welfare state. Emphasis is on the historically specific social relations that have shaped racism in Canadian welfare state policy. The orientation of the course is to analyze social policies from a grass-roots perspective.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.320★

Social Work Practice in Communities and Organizations

This course introduces students to major theories and practices pertaining to work in communities and human service organizations. The social causes of client problems and the impact of agency structures on services are explored. Social change theories and methods for social work practitioners are examined.

Prerequisites: Honours standing in the B.S.W. program, Social Work 52.200 and 52.210★, (or 52.300), and 52.360, or permission of the School of Social Work. 52.300 and 52.360 may be taken concurrently.

Social Work 52.321★

Social Work Practice: Individuals, Families and Groups

This course focuses on the development of practice competency in helping individuals, families and groups. Emphasis is on integrating interpersonal and analytic skills in learning effective helping strategies within a structural framework that acknowledges the influence of class, race and gender in shaping personal and social well-being.

Prerequisite: Social Work 52.320★.

Social Work 52.322★

Practice Skills in Social Work

An opportunity to begin to practice specific analytical and intervention skills that are needed for structural social work and that are discussed in other courses. These skills are further developed during Field Practice I and II. The emphasis is on experiential learning, connected to readings in this course and related to life and work experience.

Precludes additional credit for Social Work 52.222★ (no longer offered).

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.324★

Models of Practice with Individuals and Families

This course examines contemporary models of social work practice (ie. psychosocial, problem-solving, the constructivist-developmental paradigm and cybernetic epistemology). The strengths and limitations of each model are considered, as well as issues, questions and problems relating to practice.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.325★

Strategies of Community Change

An introduction to models and methods of grass-roots organizing for social change. Studying and working with community groups, students learn strategic planning, organizing, and evaluation skills.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.327★

Race and Culture in Direct Practice

This course introduces students to race and culture in direct practice from a structural perspective. The content covers direct intervention and social action, and their inter-relationship with policy development from a grass-roots perspective. Emphasis is on developing anti-racist practice skills in social work. This is a practical course that provides the student with the opportunity to meet and question a variety of practitioners about the work they do and the realities they face.

Prerequisite: Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.351★**Statistics for Social Workers**

This course concentrates on the concepts and applications of descriptive and inferential statistics that are relevant to the types of problems encountered by social workers and other human service practitioners. Emphasis is placed on the selection and utilization of statistical methods in policy making and program development.

Prerequisites: Social Work 52.100; or 52.300, and 52.250 or equivalent, or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.352★**Qualitative Research Methods in Social Work**

This course introduces students to qualitative research. It focuses especially on how to gather data that exists in terms of lived experience thickly embedded in the historical, interactional, emotional and relational worlds of everyday life. The course draws on strategies from feminist research, participatory and social action research, phenomenological research and makes application to social work practice.

Prerequisites: Social Work 52.100; or 52.300, and 52.250 or equivalent, or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.360 (2.0 credits)**Field Practice I**

This course provides an opportunity to integrate theory with practice in a community setting. The student will spend an equivalent of two days per week over two terms in field work experience supervised by a Field Instructor. This field work will include attendance at a bi-weekly seminar. The course is graded on a satisfactory/unsatisfactory basis. There is no supplemental examination in this course.

Prerequisites: Honours standing in the B.S.W. and concurrent enrolment in Social Work 52.320★ in the Fall term and 52.321★ in the Winter term, and permission of the School of Social Work.

Social Work 52.412★**Aboriginal Peoples and Social Policy**

This course introduces students to specific social welfare issues of Canadian Aboriginal Peoples (Indian, Métis, Inuit), such as child welfare, racism, justice system, violence against women and children, substance abuse, housing, etc. Emphasis is on the analysis of policy issues within the historical and contemporary social, political, and economic context of Aboriginal Peoples and from their standpoint. An international perspective is also emphasized. The course examines theoretical approaches to analyzing Aboriginal social welfare and policy and introduces students to self-determined Aboriginal social policy and programs.

Precludes additional credit for Social Work 52.312★ (no longer offered).

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.413★**Practice and Policy in Immigration**

This course introduces students to issues specific to

practice and policy in Canadian immigration. The content includes: the Canadian and international responses to immigration and refugee policies; the historical context; direct practice with immigrants and refugees; settlement and integration issues; immigrant and refugee women; intergenerational family issues; resources and community organizing.

Precludes additional credit for Social Work 52.313★ (no longer offered).

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.414★**International Themes in Social Work and Social Welfare**

This course provides an introduction to the practice of social work and the nature of social welfare policies in the Third World. With respect to social work practice, the focus is on emerging trends in practice, in the context of political, economic and social developments in Third World countries. Similarly, social policies are examined in relation to the needs of the people. The course also examines problems inherent in the importation of North American ideas and practices in the field of social work and social welfare.

Precludes additional credit for Social Work 52.314★ (no longer offered).

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.420★**Honours Integrative Seminar**

This Honours seminar is designed to help students to arrive at a synthesis of theory and practice, and to develop skills of critical self evaluation.

Prerequisites: Fourth-year Honours standing in the B.S.W. program. Social Work 52.310★, 52.320★, 52.321★, 52.360 and 52.460, or 52.461 and 52.462.

Social Work 52.422★**AIDS: Policy, Programs and Practice**

Social workers are increasingly being confronted with the personal, social and political aspects of Acquired Immune Deficiency Syndrome (AIDS). This course examines the knowledge, skills and values important for social workers in co-ordinating health and social services, engaging in program development and policy analysis and working in partnership with people living with AIDS.

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.423★**Social Work Practice from an Aboriginal Perspective**

This course introduces students to the cultural identity of the Original Peoples of Canada, their traditional values, cultural-based behaviour and the effects on them of changing times and relations. Special attention is given to the culture-specific skills and approaches particular to traditional and current helping with First Nations People. The course also examines the role of the political, legal, and constitutional status

of Canadian Aboriginal Peoples, and how those create many of the problems that bring Aboriginal Peoples to social agencies and limit options for self-determination.

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work. Lecture and discussion three hours a week.

Social Work 52.424★

Social Work and Aging

This course orients students to social perspectives on aging and specifically focuses on models of practice that contribute to the independence of elderly people. It considers social programs and policies, such as social insurance, social services, housing, public health and health care which affect older people. It also considers how social, psychological and political issues relate to independence in later life.

Prerequisite: Third-year Honours standing, Social Work 52.100, or 52.300 (which may be taken concurrently), or permission of the School of Social Work. Lecture and discussion three hours a week.

Social Work 52.426★

Feminist Counselling

This course is designed to examine the theory, practice and literature of feminist counselling, an approach that weaves together personal and political aspects of women's lives in the helping process. Attention is paid to the commonalities among women arising from experiences of sexism and the differences arising from racism, class oppression, heterosexism, disability, ageism, etc. Emphasis is on practice, on ways of working from both a provider and consumer perspective. A high degree of student participation is essential.

Prerequisite: Social Work 52.321★ or permission of the School of Social Work.

Lecture and discussion three hours a week.

Social Work 52.430★

Social Work: Persons with Disabilities

This course provides the opportunity for critical examination of social work roles in regards to persons with disabilities. It offers a structural analysis of policies and practices pertaining to persons with disabilities by examining cultural, historical, medical, social, political and economic factors impacting the lives of persons with disabilities. A primary theme of this course is to promote a disability rights perspective and to challenge the medical model and "ableist" ideals which dominate practices with persons with disabilities.

Precludes additional credit for Social Work 52.309 (when listed as Social Work with People with Disabilities).

Prerequisite: Third-year Honours standing, Social Work 52.100; or 52.300 (which may be taken concurrently), or permission of the School of Social Work. Lecture and discussion three hours a week.

Social Work 52.460 (2.0 credits)

Field Practice II

This course offers the opportunity in the practice setting to apply, test, develop and integrate knowledge, theory and skills for social work in one or more of the following areas: practice with individuals, families, groups and communities; research; social ad-

ministration and policy. The student will spend four days per week in the placement. Along with field supervision, this course includes a bi-weekly field seminar. This course is graded on a satisfactory/unsatisfactory basis. There is no supplemental examination in this course.

Prerequisites: Honours standing in the B.S.W. program, Social Work 52.310★, 52.320★, 52.321★, 52.360, and permission of the School of Social Work.

Social Work 52.461

Field Practice II A

This course offers the opportunity in the practice setting to apply, test, develop and integrate knowledge and skills for social work in one or more of the following areas: practice with individuals, families and communities; research; social administration and policy. The student will spend two days a week in placement. Along with field supervision, this course includes a bi-weekly field seminar. This course is graded on a satisfactory/unsatisfactory basis. There is no supplemental examination in this course. Social Work 52.461 and 52.462 must be taken consecutively.

Precludes additional credit for Social Work 52.460.

Prerequisite: Honours standing in the B.S.W. program, Social Work 52.310★, 52.321★, 52.360, and permission of the School of Social Work.

Social Work 52.462

Field Practice II B

This course offers the opportunity in the practice setting to apply, test, develop and integrate knowledge and skills for social work in one or more of the following areas: practice with individuals, families and communities; research; social administration and policy. The student will spend two days a week in placement, along with field supervision. This course is graded on a satisfactory/unsatisfactory basis. There is no supplemental examination in this course. Social Work 52.461 and 52.462 must be taken consecutively.

Precludes additional credit for Social Work 52.460.

Prerequisites: Honours standing in the B.S.W. program, Social Work 52.310★, 52.320★, 52.360, 52.461, and permission of the School of Social Work.

Social Work 52.490★ 52.492★

Independent Study

A reading or research course for students who wish to investigate a particular topic of interest. Available to Third- and Fourth-year students only. Students may take a maximum of one credit of independent study in their total program.

Social Work 52.498

Honours Essay

Candidates for the B.S.W. may choose to undertake a research essay under the supervision of a faculty adviser. The project may take the form of an experiment, a case-study, historical research, or such other work as meets with the adviser's approval. Students should refer to general Faculty of Social Sciences regulations regarding submission of Honours Essays. (See p. 76.)

Prerequisites: Third- or Fourth-year Honours standing in the B.S.W. and permission of the School of Social Work.

(Social Sciences)

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Paul Reed, *Statistics Canada*
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George M. Torrance, *Consultant*

General Information

The Department of Sociology and Anthropology offers the following undergraduate programs:

Pass in Sociology-Anthropology
Honours in Anthropology
Honours in Sociology

All of these programs can be taken either as principal concentrations or in combination with other disciplines. Details of these programs are outlined below.

The several types of courses offered by the Department are indicated by the following numerical prefixes:

53 Sociology
54 Anthropology
56 Sociology-Anthropology

Provided they meet the requirements of the particular program for which they are registered, students may select their courses from any or all of these.

Students may take both Sociology 53.100 and Anthropology 54.100 for credit, but only one will be included in the calculation of the Sociology/Anthropology GPA; the other will count toward the maximum credits permitted in Sociology/Anthropology. If Sociology/Anthropology 56.100 is taken, Sociology 53.100 or Anthropology 54.100 may not be taken for credit.

Mention: français

Students who wish to qualify for the "Mention: français" notation in Sociology/Anthropology may do so by taking the following pattern of courses in their degree program:

1. 1.0 credit in the advanced study of the French language (a minimum of French 20.150 or 20.152).
2. 1.0 credit in French-Canadian culture and heritage (two of French 20.267★, 20.268★, 20.281★).
3. 1.0 Second or Third-year credit in Sociology and/or Anthropology taught in French at Carleton or at another University, and approved by the Pass or Honours Program Co-ordinators.
4. In addition, for B.A. Honours in Sociology or Anthropology, 1.0 Fourth-year credit taught in French in Sociology and/or Anthropology at Carleton or at another University, as approved by the respective Honours Program Co-ordinator.

Academic Audit Report

Each student is provided with an Academic Audit Report. This important document is a computerized statement of the student's degree and disciplinary requirements, matched with the courses completed or in progress; it also includes requirements left to be completed. Students who require assistance with the interpretation of their Academic Audit Report should refer to the *Undergraduate Handbook*, published by the Department of Sociology and Anthropology, and/or consult with the appropriate departmental program Co-ordinator.

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Note:

Anthropology 54.203 is a prerequisite for Anthropology 54.310 (Theory and Methodology in Anthropology). Students should take note of this in planning their program. Please consult with the Department on this issue.

Pass Program

Pass Program in Sociology-Anthropology

1. Students in the Pass program in Sociology-Anthropology must successfully complete 6.0 credits in the sociology-anthropology field:

- (a) one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C- or better;
- (b) either Sociology 53.203 or Anthropology 54.203;
- (c) either Sociology-Anthropology 56.205 or Anthropology 54.310;

(d) 1.0 further credit in Sociology and/or Anthropology above the 200-level;

(e) 2.0 additional credits beyond the 100-level in Sociology and/or Anthropology.

2. Students may not count more than 9.0 credits in Sociology and/or Anthropology toward a Pass B.A. degree.

3. Final year students with the required standing may be given permission to take a course at the 400-level. It is also expected that some work will be taken in related disciplines in the Social Sciences.

4. Students must have a GPA of 4.0 or better in Sociology and/or Anthropology courses counting toward the degree requirements (see 1. above) in order to graduate.

5. A total of 15.0 credits beyond Qualifying-University year is required.

Students are strongly advised to consult the Co-ordinator of the Pass program regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

Combined Pass Programs

1. Students combining Sociology-Anthropology with another discipline must successfully complete 4.0 credits in Sociology and/or Anthropology:

(a) one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C- or better;

(b) one of Sociology 53.203, Anthropology 54.203, Sociology-Anthropology 56.205 or Anthropology 54.310. *Note:* It is recommended that Pass B.A. Combined Majors who take Psychology 49.200 take either Sociology-Anthropology 56.205 or Anthropology 54.310.

(c) 1.0 further credit in Sociology and/or Anthropology above the 200-level;

(d) 1.0 additional credit beyond the 100-level in Sociology and/or Anthropology.

2. Students may not count more than 7.0 credits in Sociology and/or Anthropology toward a B.A. Combined Pass degree.

3. Final year students with the required standing may be given permission to take a course at the 400-level.

4. Students must have a GPA of 4.0 or better in Sociology and/or Anthropology courses counting toward the degree requirements (see 1. above) and in the requirements of the other Major discipline in order to graduate.

5. A total of 15.0 credits beyond Qualifying-University year is required.

Combined Pass programs should be worked out in consultation with the departments concerned, and may include other requirements additional to those listed above.

Students are strongly advised to consult the Co-ordinator of the Pass program regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

Honours Programs

General

Honours programs may be entered from the Honours First year in the Social Sciences or by transfer from the Pass program if the appropriate standing has been attained. Students taking Honours in Sociology or Anthropology are expected to meet the general University regulations governing the degree and to fulfill certain additional requirements depending on the program selected. The practicum will be considered as a credit in determining a student's final standing. The following programs are available.

Sociology

The requirements are:

1. 9.0 credits in Sociology and/or Anthropology:
 - (a) one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better;
 - (b) *either* Sociology 53.203 *or* Anthropology 54.203 (Sociology 53.203 is recommended);
 - (c) Sociology-Anthropology 56.205 and Sociology 53.406 (students should note that Sociology-Anthropology 56.205, (or 56.305), is a prerequisite for Sociology 53.406);
 - (d) Sociology 53.370 (it is recommended that students take Sociology 53.370 in the Third year);
 - (e) 1.0 credit in Sociology and/or Anthropology at the 400- or 500-level;
 - (f) Sociology 53.495;
 - (g) 2.0 additional credits beyond the 100-level within the Department.
2. A Minor consisting of 3.0 credits in one of the following: Economics, Geography, History, Philosophy, Political Science, Psychology, or as arranged in consultation with the Co-ordinator of Honours (Sociology).
3. A maximum of 12.0 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Honours in Sociology.
4. Students entering Fourth year must have and maintain a GPA of 6.5 or better in their Major; prior to that, a GPA of 6.0 or better in the Major discipline is required.
5. A total of 20.0 credits beyond Qualifying-University year is required.

It is recommended that students take a course (or courses) involving formal reasoning (e.g., Mathematics 69.109★ or 69.119★, or Philosophy 32.201★) during their first two years.

Students are strongly advised to consult the Co-ordinator of Honours (Sociology) regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

Anthropology

The requirements are:

1. 9.0 credits in Anthropology and/or Sociology:
 - (a) one of Anthropology 54.100, Sociology 53.100, Sociology-Anthropology 56.100 with a grade of C+ or better;

- (b) Anthropology 54.203;
- (c) Anthropology 54.310, 54.410 and 54.495;
- (d) 1.0 credit in Anthropology and/or Sociology at the 400- or 500-level;
- (e) 3.0 additional credits beyond the 100-level within the Department.

2. A maximum of 12.0 credits in Anthropology and/or Sociology may be counted toward the degree of B.A. with Honours in Anthropology.

3. Students entering Fourth year must have and maintain a GPA of 6.5 or better in their Major; prior to that, a GPA of 6.0 or better in the Major discipline is required.

4. A total of 20.0 credits beyond Qualifying-University year is required.

Students are strongly advised to consult the Co-ordinator of Honours (Anthropology) regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

Combined Honours in Sociology

Students are strongly advised to consult the Co-ordinator of Honours (Sociology) regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

The general requirements for Combined Honours in Sociology are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.
2. Sociology 53.203 *or* Anthropology 54.203 (Sociology 53.203 is recommended).
3. Sociology-Anthropology 56.205 *or* Sociology 53.406; if the Honours Essay is written in Sociology, Sociology 53.406 is recommended (students should note that Sociology-Anthropology 56.205, (or 56.305), is a prerequisite for Sociology 53.406).
4. Sociology 53.370 (it is recommended that students take Sociology 53.370 in the Third year).
5. 1.0 credit in Sociology and/or Anthropology at the 400- or 500-level.
6. (a) If the Honours Essay is written in Sociology, Sociology 53.495 and 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level;
- (b) If the Honours Essay is written in the other discipline, 2.0 additional credits in Sociology and/or Anthropology beyond the 100-level.

Normally, Honours students will be expected to undertake an Honours Essay in one of the disciplines; in those cases where the second discipline does not require an Honours Essay, alternative arrangements may be considered by the Co-ordinator of Honours (Sociology).

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Sociology and another discipline.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that,

a GPA of 6.0 or better in each Major discipline is required.

It is recommended that students take a course (or courses) involving formal reasoning (e.g., Mathematics 69.109★ or 69.119★, or Philosophy 32.201★) during their first two years.

The following programs are exceptions to the foregoing requirements:

Combined Honours in Sociology and Economics

The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.
2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended), followed by Sociology 53.370 or Economics 43.220 (if the Honours Essay is written in Sociology, Sociology 53.370 is recommended; students who take Sociology 53.370 should do so in the Third year).
3. Sociology-Anthropology 56.205 or Sociology 53.406; if the Honours Essay is written in Sociology, Sociology 53.406 is recommended (students should note that Sociology-Anthropology 56.205, (or 56.305), is a prerequisite for Sociology 53.406).
4. 1.0 credit in Sociology and/or Anthropology at the 400- or 500-level.
5. (a) If the Honours Essay is written in Sociology, Sociology 53.495 and 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level; (b) If the Honours Essay is written in Economics, 2.0 additional credits in Sociology and/or Anthropology beyond the 100-level.

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Economics and Sociology.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

Note:

Consult the Department of Economics. (See p. 242.)

Combined Honours in Sociology and Geography

The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.
2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended).
3. Sociology-Anthropology 56.205 or Sociology 53.406; if the Honours Essay is written in Sociology, Sociology 53.406 is recommended (students should note that Sociology-Anthropology 56.205, (or 56.305), is a prerequisite for Sociology 53.406).
4. Sociology 53.370 (if the Honours Essay is written in Geography, 1.0 optional Sociology and/or Anthropology credit beyond the 100-level can be substituted

for Sociology 53.370; students who take Sociology 53.370 should do so in the Third year).

5. 1.0 credit in Sociology and/or Anthropology at the 400- or 500-level.

6. (a) If the Honours Essay is written in Sociology, Sociology 53.495 and 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level; (b) If the Honours Essay is written in Geography, 2.0 additional credits in Sociology and/or Anthropology beyond the 100-level.

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Geography and Sociology.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

Note:

Consult the Department of Geography. (See p. 281.)

Combined Honours in Sociology and Journalism

Students may select a course pattern that will lead, at their option, to either the degree of B.A. with Combined Honours in Journalism and Sociology, or B.J. (with Sociology). At the end of the Third year, students admitted prior to 1995-96 will elect to write their Honours Essay in either Sociology or Journalism. Should students select Sociology, they will be awarded the degree of B.A. upon graduation. Students selecting Journalism will be awarded the degree of B.J. (with Sociology) upon graduation. In either case, students will complete 20.5 credits.

Students admitted to Journalism from 1995-96 on must complete 20.0 credits. If they wish to graduate with a B.A. they must complete the Honours essay in Sociology; otherwise, the degree will be a B.J. (Hons.).

The Combined Honours program in Sociology and Journalism requires a total of 20.0 credits for students admitted to Journalism for 1995-96 on, and 20.5 credits for students admitted prior to 1995-96. The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.
2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended).

Note: Mass Communication 27.201 can be substituted for Sociology 53.203 or Anthropology 54.203.

3. Sociology-Anthropology 56.205 or Sociology 53.406; if the Honours Essay is written in Sociology, Sociology 53.406 is recommended (students should note that Sociology-Anthropology 56.205, (or 56.305), is a prerequisite for Sociology 53.406).
4. Sociology 53.370 (it is recommended that students take Sociology 53.370 in the Third year).
5. 1.0 credit in Sociology and/or Anthropology at the 400- or 500-level.
6. (a) If the Honours Essay is written in Sociology,

Sociology 53.495 and 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level (not including Sociology-Anthropology 56.211, if taken before 1994-95);

(b) If students are obtaining a B.J., 2.0 additional credits in Sociology and/or Anthropology beyond the 100-level (not including Sociology-Anthropology 56.211, if taken before 1994-95).

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degrees of B.A. with Combined Honours in Journalism and Sociology or B.J. (with Sociology).

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

Note:

Consult the School of Journalism and Communication. (See p. 352.)

Combined Honours in Sociology and Mass Communication

The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.

2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended). *Note:* Mass Communication 27.201 can be substituted for Sociology 53.203 or Anthropology 54.203; 1.0 additional Sociology and/or Anthropology credit beyond the 100-level would then be required (not including Sociology-Anthropology 56.211, 56.311, if taken before 1994-95, 56.430★, 56.431 and 56.432★).

3. Sociology-Anthropology 56.205 or Sociology 53.406; if the Honours Essay is written in Sociology, Sociology 53.406 is recommended (students should note that Sociology-Anthropology 56.205 (or 56.305), is a prerequisite for Sociology 53.406).

4. Sociology 53.370 (it is recommended that students take Sociology 53.370 in the Third year).

5. 1.0 credit in Sociology and/or Anthropology at the 400- or 500-level.

6. (a) If the Honours Essay is written in Sociology, Sociology 53.495 and 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level (not including Sociology-Anthropology 56.211, 56.311, if taken before 1994-95, 56.430★, 56.431 and 56.432★);

(b) If the Honours Essay is written in Mass Communication, 2.0 additional credits in Sociology and/or Anthropology beyond the 100-level (not including Sociology-Anthropology 56.211, 56.311, if taken before 1994-95, 56.430★, 56.431 and 56.432★).

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Mass Communication and Sociology.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

Note:

Consult Mass Communication. (See p. 380.)

Combined Honours in Sociology and Political Science

The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.

2. One of the following methods sequences:

(a) in the Second year, Political Science 47.270; in the Third year, Sociology 53.370; or

(b) in the Second year, Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended); in the Third year, Political Science 47.471★ and 47.472★ (students should note that Political Science 47.471★ and 47.472★ may not be offered every year).

3. Sociology-Anthropology 56.205 or Sociology 53.406; if the Honours Essay is written in Sociology, Sociology 53.406 is recommended (students should note that Sociology-Anthropology 56.205 (or 56.305), is a prerequisite for Sociology 53.406).

4. 1.0 credit in Sociology and/or Anthropology at the 400- or 500-level.

5. (a) If the Honours Essay is written in Sociology, Sociology 53.495 and 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level;

(b) If the Honours Essay is written in Political Science, 2.0 additional credits in Sociology and/or Anthropology beyond the 100-level.

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Political Science and Sociology.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

Note:

Consult the Department of Political Science. (See p. 440.)

Combined Honours in Sociology and Psychology

The requirements in the Sociology component of this program are:

1. One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 with a grade of C+ or better.

2. Sociology 53.203 or Anthropology 54.203 (Sociology 53.203 is recommended). *Note:* Students who take Psychology 49.200 may substitute 1.0 optional Sociology and/or Anthropology credit beyond the 100-level for Sociology 53.203 or Anthropology 54.203.

3. Sociology-Anthropology 56.205 or Sociology 53.406; if the Honours Essay is written in Sociology, Sociology 53.406 is recommended (students should note that Sociology-Anthropology 56.205, (or 56.305), if taken prior to 1996-97, is a prerequisite for Sociology 53.406).

4. 1.0 credit in Sociology and/or Anthropology at the 400- or 500-level.

5. (a) If the Honours Essay is written in Sociology, Sociology 53.370 (which should be taken in the Third year), 53.495 and 1.0 additional credit in Sociology and/or Anthropology beyond the 100-level;

(b) If the Honours Essay is written in Psychology, 3.0 additional credits in Sociology and/or Anthropology beyond the 100-level.

A maximum of 9.0 credits in Sociology and/or Anthropology may be counted toward the degree of B.A. with Combined Honours in Psychology and Sociology.

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

Note:

Consult the Department of Psychology. (See p. 453.)

Combined Honours in Anthropology

Students intending to enter an Honours program combining Anthropology with another discipline should take one of Anthropology 54.100, Sociology 53.100, Sociology-Anthropology 56.100 and the introductory course in the other discipline in their First year. A minimum of 6.0 credits in Anthropology and/or Sociology is required, but not more than 9.0 credits in Anthropology and/or Sociology may be counted toward the degree of B.A. with Combined Honours in Anthropology and another discipline.

Students are strongly advised to consult the Co-ordinator of Honours (Anthropology) regularly throughout their degree studies to ensure that they are observing departmental and University requirements.

The general requirements for Combined Honours in Anthropology are:

1. One of Anthropology 54.100, Sociology 53.100, Sociology-Anthropology 56.100 with a grade of C+ or better.

2. Anthropology 54.203.

3. Anthropology 54.310.

4. 1.0 credit in Anthropology and/or Sociology at the 400- or 500-level.

5. (a) If the Honours Practicum is taken in Anthropology, Anthropology 54.410 and 54.495;

(b) If the Honours Essay is written in the other discipline, 2.0 additional credits in Anthropology and/or Sociology beyond the 100-level.

Normally, Honours students will be expected to undertake an Honours Essay in one of the disciplines. In those cases where the second discipline does not require an Honours Essay, alternative arrangements may be considered by the Co-ordinator of Honours (Anthropology).

Students entering Fourth year must have and maintain a GPA of 6.5 or better in each Major; prior to that, a GPA of 6.0 or better in each Major discipline is required.

Criminology and Criminal Justice Concentration

For details see p. 229.

Graduate Programs

The Department offers studies leading to the following graduate degrees: M.A. in Sociology, M.A. in Social Anthropology and Ph.D. in Sociology. For further details consult the *Calendar of the Faculty of Graduate Studies and Research*. Fourth-year Honours students may take one or more graduate seminars with the permission of the Department.

Prerequisite

The normal prerequisite for courses taken beyond the 100-level is one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100. Otherwise, students may be admitted with permission of the Department.

Course-Related Tutorials

Students within the Department may include among their courses one or more tutorials. Further information is available from the Undergraduate Program Co-ordinators.

Written permission from the Chair of the Department of Sociology and Anthropology is necessary before registration in these courses can take place.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Sociology 53.100

Introduction to Sociology

An introduction to the comparative study of social groups, classes and institutions. The main emphasis is on industrialized societies with special attention given to Canadian society.

Precludes additional credit for Sociology-Anthropology 56.100.

Students in any Sociology and/or Anthropology program should consult the departmental General Information section on p.487 and the departmental Pass/Combined Pass, Honours/Combined Honours sections on p. 488.

Lectures and discussion three hours a week.

Anthropology 54.100

Introduction to Anthropology

Anthropology is the study of the alternative ways that

humans perceive, believe and behave. The course considers the nature and evolution of human cultural systems and forms of adaptation ranging from hunting and gathering to farming and stratified state formations. Attention is given to such varying institutions as marriage and the family, economics, politics and religion. Both the adaptive and potentially maladaptive aspects of human behaviour are examined.

Precludes additional credit for Sociology-Anthropology 56.100.

Students in any Sociology and/or Anthropology program should consult the departmental General Information section on p.487 and the departmental Pass/Combined Pass, Honours/Combined Honours sections on p. 488.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.100

Principles of Comparative Social Structure: Sociology and Anthropology

An introduction to the comparative study of human society from the parallel perspective of sociology and social anthropology. The principal focus is on continuity and change in the development of relatively simple and highly complex societies.

Precludes additional credit for Sociology 53.100 or for Anthropology 54.100.

Students in any Sociology and/or Anthropology program should consult the departmental General Information section on p.487 and the departmental Pass/Combined Pass, Honours/Combined Honours sections on p.488

Lectures and discussion three hours a week.

Sociology 53.203

Introduction to Sociological Research

An introduction to general issues in sociological research. Topics include the logic of research, problems of research design, fundamental techniques of data collection in sociology and problems in the ethics of research. Students are introduced to both qualitative and quantitative research methods.

Precludes additional credit for Anthropology 54.203.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and workshop three hours a week.

Anthropology 54.203

Introduction to Anthropological Research

An introduction to general theoretical and methodological issues in anthropological research. Topics include early developments in anthropological theory, the relation between theory and observation, problems of research design, fundamental techniques of data collection, the actual experience of fieldwork, and problems in the ethics of research. Students are introduced to both qualitative and quantitative methods.

Precludes additional credit for Sociology 53.203.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and workshop three hours a week.

Sociology-Anthropology 56.205

The Development of Sociological and Anthropological Thought

The development of sociological and anthropological

thought since the end of the eighteenth century. Various theoretical approaches are placed within their historical, social and intellectual contexts. The writings of key figures such as Comte, Spencer, Marx, Durkheim, Weber, Malinowski and Radcliffe-Brown are examined and analyzed as illustrations of the development of theoretical approaches in both disciplines. Connections between theoretical traditions and current theoretical debates in sociology and anthropology are considered.

Precludes additional credit for Sociology/Anthropology 56.305 (no longer offered).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.206★

Cultural Adaptations and the Environment

This course examines the ways in which humans affect and are affected by the natural environment. The focus is upon simpler, non-industrial societies whose modes of subsistence are based upon hunting and gathering, horticulture, or pastoralism. Basic concepts and theories of anthropological ecology are introduced.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.207★

The Anthropology of Conquest

What is the fate of a small-scale or non-Western society in a situation of partial or pervasive contact with colonial or industrial nation-states? Is it one of mutual adjustment and exchange or one of devastating disruption? This course examines these and other closely related issues with examples drawn from Canadian history and other parts of the world. Specific topics include forced labour and mechanisms of resource appropriation, acculturation and ethnocentrism, wars of extermination and the demographic effects of contact, treaty-making and land policies, revitalization movements and other aboriginal responses to conquest.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.210

Social Psychology

The study of the relationship between the individual and the social system. Emphasis is on integrating individual and social approaches. How does a group influence psychological processes (attitudes, cognitions, motivations, etc.)? How does an individual influence a group? Group processes such as socialization, symbolic interaction, coercion, conformity, leadership, cohesion, etc., are studied.

Precludes additional credit for Psychology 49.210★.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, introductory Psychology, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.211
The Sociology of Media Studies

Topics in the area of media studies and their relationship to cultures and social structures will be treated.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.215★

Language, Ideology and Power

Offered in the Department of Linguistics and Applied Language Studies as Linguistics 29.275★.

Prerequisite: Linguistics 29.100.

Sociology-Anthropology 56.216★

Conversational Analysis

Offered in the Department of Linguistics and Applied Language Studies as Linguistics 29.276★.

Prerequisite: Linguistics 29.100.

Sociology-Anthropology 56.220

Canadian Society

The course focuses on the study of Canadian society as an ongoing social system. Alternative theoretical perspectives are developed and examined for the interpretation they provide of recurrent social issues. Special attention is given to persistence and change in regional, ethnic, class and sex-role differences.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.221★

Phonetics

Offered in the Department of Linguistics and Applied Language Studies as Linguistics 29.201★.

Precludes additional credit for Anthropology 54.301★ and Linguistics 29.301★ (both no longer offered).

Prerequisite: Linguistics 29.100.

Anthropology 54.223★

Language Analysis

Offered in the Department of Linguistics and Applied Language Studies as Linguistics 29.203★.

Precludes additional credit for Anthropology 54.303★ and Linguistics 29.303★ (both no longer offered).

Prerequisite: Linguistics 29.100.

Anthropology 54.225

Prehistoric Anthropology, Cultural and Biological Evolution of Humans

An examination, from an evolutionary point of view, of the physical anthropology and archaeology of early humans, their origins, the development of technology and of complex institutions, and the nature of racial differences.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.230

Social Systems of Non-Western Societies

A study of social anthropology with an emphasis on cross-cultural comparisons of various societies. The

course focuses on current directions and debates in the study of kinship, political, economic and symbolic systems, culture change and other areas of anthropological concern.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.235

Ethnic Group Relations

An anthropological and sociological study of minority groups and of ethnic and "race" relations in inter-cultural societies. The course focuses on intergroup processes within a comparative framework.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.241

Kinship, Marriage and the Family

The primary focus of this course is upon contemporary marriage and family life with a major emphasis on the family in Canadian society. The background for this study is developed through the consideration of historical and cross-cultural perspectives on kinship and family forms. Consideration is given to current issues, including changes in marriage and parenthood and associated policy changes.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.243

Religion and Society

A broad survey of religious institutions, with comparative and historical emphases. Examination is made of the major social, cultural and psychological theories of religion, as well as of the methodological problems associated with the subject matter. Attention is also placed on a range of topics such as totemism, social change, utopian communities, secularization, and the relationship of religion to other social institutions and processes. (Also listed as Religion 34.243.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.247

Women in Society

An enquiry into the historical and contemporary roots of sex-role determination. A comparative analysis of the position of women in various social formations is attempted, in conjunction with an examination of various theoretical perspectives concerning women's societal role. Emphasis is on the Canadian context.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.248★

The Anthropology of Women

An examination of male and female roles and status in relation to societal factors such as economics,

decision-making, and ideology. Emphasis is on the study of women in traditional, and changing, non-Western pre-industrial societies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.249★

Development, Dependency and Gender

An examination of anthropological and feminist analyses of the changing gendered division of labour in the Third and Fourth Worlds. Emphases are on case studies that illustrate the impact of "development" or "underdevelopment" on gender roles and gender inequality, and on theoretical understandings which "explain" this impact.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.251★

Introduction to Population Studies

An introduction to the basic principles of demography. Past and present population growth, and the determinants of population growth, are examined. Interrelations among demographic, social, cultural and economic factors are investigated. Where possible, Canadian demographic material is discussed.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.252★

Sociology of Aging and the Elderly

An investigation of the implications of population aging for Canadian social structure and the major issues, theories and research regarding aging and the elderly in contemporary society. The implications of Canada's changing age structure for such institutions as the economy, the polity and the family are examined in a comparative perspective. Social policy issues related to aspects of the aging process such as retirement and pensions are discussed. Special attention is given to a detailed examination of the composition and living conditions of Canada's elderly.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.253★

Introduction to Human Ecology

The course focuses on interrelationships among population, organization, environment and technology, and on the relationship between man and the natural environment from the perspective of resource use, management and policy.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.254★

Urban Sociology

An examination of issues related to people and the urban environment, including the historical process of urbanization, the rural-urban transition, and the diffusion of urban values and life styles. Some attention is paid to contemporary urban problems, such as urban renewal, pollution and the pressures of the urban environment on social institutions.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.255★

Sociology of Deviance

An analysis of the relation of deviant and criminal behaviour in modern society to the functioning of social systems. A special emphasis is given to theories of causation, types of deviance, the creation and evasion of rules and social roles of deviants.

Prerequisite: Grade of C- or better in one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent.

Lectures and discussion three hours a week.

Sociology 53.256★

Police in Society

An examination of the organization and activities of the police in industrialized societies. Particular attention is devoted to Canadian information, and the themes of social control, police discretion, and the relations of police to a democratic society.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.257★

The Sociology of Work

A study of the sociological aspects of work with particular emphasis on: the changing meaning of work; changing impact of technology; alienation; shift from primary to secondary to tertiary sectors; changing participation rate of men and women; ethnicity and work; impact of social policy; and labour resources problems in developed and developing societies.

Precludes additional credit for Sociology 53.245 (no longer offered).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.258★

The Sociology of Occupations and Professions

A study of the social history of occupations; and an examination of: occupational choice; recruitment; training and careers in non-professional and professional occupations; traditional and non-traditional views of professions, semi and para professions; and the changing participation and experiences of women in traditional and non-traditional occupations.

Precludes additional credit for Sociology 53.245 (no longer offered).

Prerequisite: One of Sociology 53.100, Anthropology

54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.
Lectures and discussion three hours a week.

Sociology 53.260★

Community

The community is studied as a localized social system in a larger social setting. This involves analysis of demographic and ecological factors as well as a variety of community-based institutions. Special attention is given to decision-making, community planning and development.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.271★

Criminology

The study of the relationship of crime and social structure with a special emphasis on policies and programs by which society reacts to crime.

Precludes additional credit for Sociology 53.270 (no longer offered).

Prerequisite: Grade of C- or better in one of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent.

Lectures and discussion three hours a week.

Anthropology 54.275★

Technology, Mind and Culture

This course presents an anthropological perspective on technology with special reference to the question of how technology evolved and how it has influenced the human experience and adaptation. The role of technology in the evolution of consciousness and culture is presented. Various theories of technology and consciousness/culture are presented, including those of Leo Marx, Ellul, Grant, Beck, Wallace, Bourdieu, Heidegger, Ihde, and Washburn.

Precludes additional credit for Sociology-Anthropology 56.285★ (if taken in 1993 - Fall term 1994).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.284★

Language and Culture

The course surveys several approaches to the study of language in anthropology. Among the topics covered are the evolution of language, the brain and language, communication among non-human primates, historical linguistics, sociolinguistics, the hermeneutics of text analysis, dialectology, body language and non-verbal communication, drum and whistle languages, language change and developmental linguistics. The course involves a laboratory during which the student learns to record linguistic data from a native speaker.

Precludes additional credit for Anthropology 54.371★ (taken prior to 1983-84), and for Sociology-Anthropology 56.285★ and 56.326★ (taken with the same topic.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or Linguistics 29.100, or permission of the Department.

Lectures and workshop three hours a week.

Sociology-Anthropology 56.285★

Selected Topics

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year.

Students should check with the Department regarding the topic offered.

Sociology-Anthropology 56.286★

Selected Topics

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

Sociology-Anthropology 56.291★ and 56.292★

Course-Related Tutorials

See explanatory note on p. 492.

Anthropology 54.302★

Phonology

Offered in the Department of Linguistics and Applied Language Studies as Linguistics 29.302★.

Prerequisite: Linguistics 29.201★ or Anthropology 54.221★.

Anthropology 54.304★

Grammatical Theory

Offered in the Department of Linguistics and Applied Language Studies as Linguistics 29.304★.

Prerequisite: Linguistics 29.203★ or Anthropology 54.223★.

Anthropology 54.310

Theory and Methodology in Anthropology

The course addresses questions of theory and methods of analysis in social anthropology. Although some attention is given to early developments in anthropological theory, the emphasis is on the contemporary formulations of functionalism, exchange theory, cultural ecology, structuralism, Marxism, feminism, and critical theory. Special attention is given to the interdependence of theory, methods of research and the analysis of concrete data taken from various societies.

Prerequisites: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent and Anthropology 54.203, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.311

Sociology of Communication Studies

Topics in the sociology of information, knowledge, communication and mass media together with the changing character of their relationship to culture and society will be discussed.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.315

Sociology of Education

An examination of educational institutions; their interplay with one another and with other social institutions; the structure of educational opportunity; the school and university seen as organizations; individual and social effects of education; the sociology of

learning. The approach is generally comparative and includes a consideration of contemporary critiques of the educational system.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.317★

Visual Anthropology

This course examines the anthropological experience as reflected in film. A number of problems are considered, including selectivity, bias, the effect of the observer's presence, and problems in reconstructing past events in film.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.318★

Archaeology in Canada

An examination of archaeological practice in North America, with particular emphasis on Canada. Topics covered include: the human settlement of the Americas; archaeological perspectives on the cultural histories of Native American peoples and on evidences of early European contact with them; the relationship between archaeological and ethnological constructions of Native peoples' culture histories and European contact; the political and ideological significance of alternative archaeological representations of these culture histories and of experiences of contact.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.319★

Issues in Canadian Native Studies

An anthropological examination of issues and policies concerning Canadian Indian, Inuit and Métis peoples. The course explores controversies surrounding social change, native rights, cultural autonomy and women's status.

Precludes additional credit for Anthropology 54.219★ (no longer offered).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.320

French Canada and Québec Society

An analysis of the economic, cultural and political aspects of present-day French Canada and Québec society, with special reference to the interplay of three fundamental themes, i.e., class, culture and nation. Particular attention is also given to the diversity of theoretical perspectives and modes of analysis which prevail in the study of the contemporary situation. A reading knowledge of French is helpful, but is not a prerequisite for the course.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.325★

Selected Topics in Sociology-Anthropology

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

Sociology-Anthropology 56.326★

Selected Topics in Sociology-Anthropology

Selected topics in sociology and/or anthropology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

Sociology-Anthropology 56.327★

Métis People in Canada

A study of the emergence of the Métis People in the Northwest during European colonization; of their social, political, economic and military organization; of their role in the entry of the Northwest into confederation with Canada; and of their culture, ideology and the conditions of their continuing identity as a people in Canada today.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.331★

Kinship and Culture

This course examines the nature of peoples' ideas concerning procreation, incest, and social relationships, and variations in descent, marriage, families, and kinship terminologies cross-culturally. The course also relates aspects of kinship to other societal institutions and ideologies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.333★

Economic Anthropology

The course is concerned with the culturally varying systems of material production, the unequal distribution of wealth and the effects that decision strategies have on social relations and change in non-industrial societies. Attention is given to fundamental controversies dividing scholars of divergent theoretical affiliations - functionalists, Marxists, and so on - with a particular emphasis on related issues of Third World or hinterland underdevelopment. Concrete case studies of gift exchange, conspicuous consumption, slavery, kin-based economies, etc., are examined in a variety of geographical and historical contexts.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.334★

Culture and Symbols

The ability to create and manipulate symbols and concrete images ranging from colours to sounds and from animals and plants to deities is a defining characteristic of cultural reality. Different anthropological methods are employed to examine symbols in all parts of the world and in a variety of social contexts, such as magical and religious rituals, mythology,

folklore, art, primitive classification, kinship and politics. The focus is on how human beings understand themselves through symbols and on alternative approaches to symbolic studies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.
Lectures and discussion three hours a week.

Anthropology 54.335★

The Prehistory of Human Settlement

This course examines the way in which human societies with different ways of life utilize space. Archaeological data are used to compare and contrast the settlement forms of hunting and gathering peoples with those of more settled village and urban dwellers. This course considers in detail the emergence in both the Old and New Worlds of settled life and the resulting changes in human-environment relations.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.
Lectures and discussion three hours a week.

Anthropology 54.336★

Medical Anthropology

An examination of the cross-cultural literature on approaches, institutions and techniques of healing. This includes the study of cultural and biological factors in the causation, diagnosis, treatment and meaning of disease. Methods in cross-cultural epidemiology and ethnographic field procedures are discussed, as is the role of symbolism and ritual in healing traditions. Additional topics include transcultural psychiatry, ethno-pharmacology, midwifery, paleopathology, health care delivery in developing countries.

Precludes additional credit for Sociology-Anthropology 56.325★ (if taken in Fall 1987).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.
Lectures and discussion three hours a week.

Sociology 53.339★

Society and Shelter

An examination of buildings and shelter as human and social products. Major areas of concern include the impact of the built environment on social processes, the perception and cognition of the built environment, the design, construction and use of buildings as social processes, the development of the design professions, and the distribution of shelter as part of social stratification. (Also listed as Architecture 76.423★.)

Precludes additional credit for Sociology 53.338 (if taken prior to 1984-85).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.
Lectures and discussion three hours a week.

Sociology 53.345★

Stratification and Mobility

An examination of the principal theoretical and empirical questions in the study of social class and social mobility in complex societies. The bases and forms of inequality are examined with the aid of data from Canada, England, the United States, Eastern

Europe, China, Japan and a number of other societies.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.346★

Industrial Sociology

An enquiry into the development, structure and prospects of industrial society and post-industrial society, including the relation of industrial institutions to the rest of society, and the internal organization of industrial institutions, including problems of management, labour and union relations.

Precludes additional credit for Sociology 53.246★ (no longer offered).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.347★

Power

The principal concern of the course is the nature of power in human groups - its sources, forms and processes. Particular attention is paid to community and national elites and power structures.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.348★

Collective Behaviour and Social Movements

An enquiry into the process of collective action as part of social change at various levels. Topics discussed include crowds, fashions, labour, political and religious movements, rebellion and revolution.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.350★

Political Behaviour

An examination of sociological contributions to the study of political behaviour and of the relations between politics and the social structure, both in Canada and in other societies. Emphasis is placed upon political socialization, the class basis of politics, conflict, mass movements and change.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.351★

Methods of Population Analysis

An introduction to demographic techniques. Problems in the collection and analysis of population data, such as population censuses and vital registration. Emphasis is placed upon the application of "demographic" methods (e.g., cohort analysis) to other areas of sociological investigation.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.356★**Complex Organizations**

An analysis of large-scale organizations in industrial and post-industrial societies. Attention will be given to the origins of these organizations and to the varieties of forms that they may take; to the various sociological explanations of these organizations; to the relation of these organizations to the structure and culture of societies; and to questions of class, gender and culture as they are acted out within complex organizations.

Precludes additional credit for Sociology 53.355 (no longer offered).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.358**Conflict and Conflict Resolution**

A comparative analysis of the structure of social and inter-cultural conflict. Methods for conflict management and resolution are examined with particular reference to mediation, bargaining and negotiation theories. Students are expected to participate in simulation exercises.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.360**Development and Social Change**

An enquiry into central theoretical debates pertaining to issues of underdevelopment, modernization, dependence, exploitation and world system formation. Emphasis is placed on the general effects of industrialism and capitalism on the contemporary history of Third World societies. Consideration is given to concrete case studies from across the world.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.370**Research Design and Data Analysis**

An integrated approach to the problems involved in the analysis of quantitative data. Research design and procedure and statistical inference are studied. It is recommended that Sociology Honours students take this course in the Third year of study, prior to commencing work on their Honours Essay.

Precludes additional credit for Economics 43.220 and Psychology 49.300.

Prerequisites: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent and in addition, Sociology 53.203 or Anthropology 54.203 or equivalent in other departments; or permission of the Department.

Lectures and workshop four hours a week.

Sociology 53.373★**Criminal Justice Policy**

A description of Canadian criminal justice administration, including prison, parole, probation and community treatment, with an emphasis on conflicting ideologies and the dynamics of policy-making decisions. Consideration is given to the relationship be-

tween criminal justice policy and other aspects of social change.

Note: Places in this course are limited; students formally admitted to and registered in the Criminology and Criminal Justice Concentration will be given priority.

Prerequisites: Sociology 53.255★, 53.271★ (53.270 prior to 1988-89) and Third-year standing, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.375★**Medical Sociology**

A study of social factors related to health and illness, the illness role, relationships between patients and health practitioners, and the organization of health services. Attention is given to both the social psychology of health and illness and the structure of organizations concerned with health care.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.377★**Sociology of Welfare Institutions**

A study of the emergence and position of welfare institutions in contemporary society with special emphasis on their relationship to social change, ideological conflicts and forms of organization.

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.380**Social Policy**

A study of social policy in relation to social change and issues in Canadian society. This involves the policy orientation and role of the social sciences, especially sociology, in assessing the socio-cultural background, the processes and the consequences of social policy. Contemporary Canadian issues are considered as case studies in social policy.

Prerequisites: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 and at least one additional 200- or 300-level credit in Sociology, or equivalent courses in related disciplines, or permission of the Department.

Lectures and discussion three hours a week.

Sociology 53.381★**Sociology of Law**

This course offers an introduction to and overview of the sociology of law. The development of sociology of law is located in sociology's wider concerns with the distinctive features of modernity, the West and capitalism. These themes are explored through the writings on law of Durkheim (changing forms of social solidarity, rise of restitutive law, contract), Weber (formal rationality, legal rationalization, economic calculation) and Marx (law, state and coercion, legal form/commodity form). The course outlines the way in which these themes have influenced the subsequent development of the sociology of law. (Also listed as Law 51.316★.)

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent.

lent, or permission of the Department.
Lectures and discussion three hours a week.

Anthropology 54.382★

Anthropology and Science Fiction

This course explores the fundamental principles of anthropology through the medium of science fiction. There are points of convergence between the literature of anthropology and the literature of science fiction, and these are explored. Topics to be covered include: order in an anarchic social field, gender and identity, the evolution of brain and consciousness, religions and symbolic systems, and the future of human societies.

Precludes additional credit for Sociology-Anthropology 56.285★ (if taken with the topic *Anthropology through Science Fiction*).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.383★

The Anthropology of Art I

This course considers anthropological approaches to the study of art. The focus is on art in small-scale, non-industrialized societies and on the art of tribal peoples who have been colonized (so-called "Fourth World" art). Topics include the economic, social, political and symbolic roles of art in social processes. Attention is given to issues of identifying and defining art forms and activities cross-culturally, and to the methods required to study and compare differing aesthetic systems.

Precludes additional credit for Sociology-Anthropology 56.285★ or 56.325★ (if taken with the same topic).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100, or an introductory course in Art History, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.384★

The Anthropology of Art II

This course applies anthropological methods and theories to the analysis of the art of selected non-Western and Fourth World societies. Case materials are drawn from selected societies.

Precludes additional credit for Sociology-Anthropology 56.286★ or 56.326★ (if taken with the same topic).

Prerequisite: Sociology-Anthropology 56.285★ or 56.325★ or 56.383★ or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.385★

Introduction to Cultural Studies

This course introduces students to research and theory in the interdisciplinary area of Cultural Studies. Cultural Studies focuses on contemporary cultural change in the advanced industrialized societies and its impact on everyday life. The implications of this research for social science and policy are assessed. Precludes additional credit for 56.325★ (if taken with the topic *"Culture Studies: An Introduction"* in 1991-92 and 1992-93).

Prerequisite: One of Sociology 53.100, Anthropology 54.100, Sociology-Anthropology 56.100 or equivalent, or permission of the Department. Third-year standing is recommended.

Lectures and discussion three hours a week.

Sociology 53.386★

Field Placement: Criminology and Criminal Justice Concentration

Experience in an agency setting, which provides the basis for translating the academic dimension into practical involvement in various aspects of criminal justice. There is no supplemental examination in this course.

Prerequisite: Open only to those students formally admitted to and registered in the Criminology and Criminal Justice Concentration.

Sociology 53.388★

Selected Issues in Criminal Justice

This course focuses on conflicting goals among components of the criminal justice system, the theory and practice of correctional institutions and their alternatives, and offenders' rights.

Note: Places in this course are limited; students formally admitted to and registered in the Criminology and Criminal Justice Concentration will be given priority.

Prerequisites: Sociology 53.255★, 53.271★ (53.270 prior to 1988-89) and Third-year standing, or permission of the Department.

Lectures and discussion three hours a week.

Sociology-Anthropology 56.391★ and 56.392★

Course-Related Tutorials

See explanatory note on p. 492.

Sociology 53.400★

Field Placement: Research and Analysis

Students in this placement gain research experience in a professional research setting. Instead of attending classes, students spend up to one day a week participating in the research of an organization. In return, students receive a half credit and are allowed to draw upon this research in their Honours Essay. Students prepare a short assessment of their placement experience. Enrolment is limited. Placement is based on selection criteria and is done by the Honours Sociology Co-ordinator. Interested students should consult with the Honours Sociology Co-ordinator.

Prerequisites: Fourth-year Honours Sociology standing, Sociology 53.370, and permission of the Department.

Anthropology 54.400★

Field Placement In Anthropology

Students in this placement gain research experience in a professional research setting. Instead of attending classes, students spend up to one day a week participating in the research of an organization. In return, students receive a half credit and are allowed to draw upon this research in their Honours Essay. Students prepare a short assessment of their placement experience. Interested students should consult with the Honours Anthropology Co-ordinator.

Prerequisites: Fourth-year Honours Anthropology standing and permission of the Department.

Sociology 53.403★

Workshop in Advanced Research Design

A research-oriented course that allows students to develop advanced research design skills in qualitative and quantitative techniques. Topics to be covered include philosophy of science, the nature of evidence, strategies of research design and data collection.

Prerequisites: Fourth-year Honours standing and Sociology 53.203, or permission of the Department.

Seminar three hours a week.

Sociology 53.404★

Applied Quantitative-Data Analysis

The course examines advanced quantitative methods of data analysis, with a focus on the development and application of technical skills. Topics to be examined may include data processing, accessing public information systems, multivariate analysis, and advanced regression techniques.

Prerequisites: Fourth-year Honours standing and Sociology 53.370, or permission of the Department.

Seminar three hours a week.

Sociology 53.406

Contemporary Theoretical Sociology

An analysis of sociological theories since the mid-twentieth century such as structuralist, phenomenology and discourse theories, as well as the contributions of modern Marxist and feminist approaches.

Precludes additional credit for Sociology 53.306 (no longer offered).

Prerequisites: Fourth-year Honours standing in Sociology, and Sociology-Anthropology 56.205, (or 56.305), or permission of the Department.

Lectures and discussion three hours a week.

Anthropology 54.410

The Ethnographic Enterprise

An examination of the premises underlying particular cases of empirical work in anthropology. The value of various anthropological paradigms for the solution of standard ethnographic problems.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology 53.424★

Studies in the Design Professions

A critical and comparative analysis of the design professions. Emphasis will be on the professions of architecture and industrial design, although engineering design, interior design and planning will be discussed as well. Comparisons will be made to the traditional professions, as well as to other occupations involved in art and design. Topics to be discussed will include the role of these professions in the development of culture and society; problems of education, career and work; the structure of knowledge in the design professions; and the nature of design practice. (Also listed as Architecture 76.424★.)

Prerequisite: For Sociology 53.424★: Fourth-year standing in Sociology or permission of the Department. For Architecture 76.424★: Third-year standing in the B.Arch. program, or Fourth-year standing in Sociology or the School for Studies in Art and Culture (in the combined Architecture/Art History program);

or permission of the School of Architecture.
Seminar three hours a week.

Sociology-Anthropology 56.430★

Communication Policy: Theory and Foundations

This course examines theoretical perspectives on the role and context of communication and cultural policy in modern Canadian society. It introduces students to basic concepts necessary to explain the role of the State in capitalist society. It explores alternative frameworks for understanding the production and legitimation of communication and cultural policy as a type of State action. (Also listed as Mass Communication 27.430★.)

Precludes additional credit for Sociology-Anthropology 56.431 or Mass Communication 27.431 (no longer offered), and Sociology-Anthropology 56.411 or Mass Communication 27.411 (if taken prior to 1986-87).

Prerequisites: Fourth-year Honours standing and Sociology-Anthropology 56.311 or Mass Communication 27.311, or permission of the Department.

Seminar three hours a week.

Sociology-Anthropology 56.432★

Communication Policy: Institutions and Practices

This course examines concrete examples of selected policy practices in the communication and cultural policy field and relates them to the institutions, agencies, actors, and social interests shaping the policy formation process in Canada. (Also listed as Mass Communication 27.432★.)

Precludes additional credit for Sociology-Anthropology 56.431 or Mass Communication 27.431 (no longer offered), and Sociology-Anthropology 56.411 or Mass Communication 27.411 (if taken prior to 1986-87).

Prerequisites: Fourth-year Honours standing and Sociology-Anthropology 56.430★ or Mass Communication 27.430★, or permission of the Department.

Seminar three hours a week.

Sociology 53.433★

Law in Advanced Capitalist Society

The course examines the different ways in which sociological and legal theory has attempted to grasp and understand the changing role and function of law in modern society, with particular reference to advanced capitalist societies. Topics include: the welfare state and the use of regulatory law; juridification and legalization; counter-trends: deregulation, informality, legal pluralism. (Also listed as Law 51.417★.)

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology 53.434★

Sociology of Law and Morals

The course examines relations between law and morals and other areas of social life in various social systems and in various historical perspectives. Problems discussed include: mores; various types of law: official, living, natural and customary laws; legitimacy of law; social operation of law, exclusive areas regulated by morality; effectiveness of law; relation between power and law or morality; human rights; totalitarian law. Different theoretical perspectives on

law and morals are analyzed. Ideas of Durkheim, Petrazzky, Weber, Pound, Aubert, Habermas, and Luhmann are discussed.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology 53.440★

Environment, Ideology and Social Policy

This course traces the development of the environmental movement in North America from the turn of the century onwards. Changing public perceptions of the environment are examined as are the various policy responses that have emerged in response to the call for environmental protection. Topics may include sustainable development, alternative energy sources, environmental impact assessment, and appropriate technology strategies. Collective versus individualistic responsibility for environmental protection is examined in the context of legal remedies to environmental problems, criminalization versus regulation, the emergence of "green" consumer products, and community recycling programs.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology 53.443★

Selected Problems in the Uses of Sociology and Social Policy Analysis

An examination of selected problems in the relation between sociology as a discipline and the uses to which it may be put. Depending on the interests of the instructor, these may include: social criticism, social intervention, social policy and social planning, social engineering, systems analysis and action research.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology-Anthropology 56.450★

Advanced Qualitative Research Methodology in Sociology and Anthropology

A study of specific methodological topics in social research. Among the topics that may be included are: archival research, interviewing, observational techniques, content analysis, and life history analysis.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Note:

The following courses, Sociology 53.451★-56.459★, are workshops organized either around a specific research topic or around some policy or interventionist issue. The content is expected to vary from year to year reflecting the current research interests of the instructor. When a workshop is offered, a detailed description will be available. In general, specific area workshops are unlikely to be offered more than once in any two-year period.

Sociology 53.451★

Workshop in Demography/Human Ecology

A research- and/or policy-oriented seminar that uses census data or other secondary sources to examine topics in Canadian population, technological development, migration or resource use, depending on the

research interests of the instructor.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology 53.452★

Workshop on Work and Organizations

A research-oriented seminar that, depending on the research interests of the instructor, may examine the occupational distribution in Canada, ethnicity, gender and work, occupational choice, trade unions, professional organizations, the professions or bureaucracy.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology 53.453★

Workshop in Criminology/Deviance

A seminar that, depending on the research interests of the instructor, may consider crime, criminal justice, social processes relating to the implementation of criminal justice policy, or other aspects of criminality or deviance.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology 53.454★

Workshop on Sociology of Education

A research- or policy-oriented seminar that, depending on the research interests of the instructor, may examine teacher expectancy effects, student culture, barriers to equality of access or other substantive issues.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology 53.455★

Workshop on Stratification and Mobility

A research-oriented seminar that, depending on the research interests of the instructor, may examine differentiation over time or comparatively, patterns of inheritance mobility, or the effects of ethnicity, of gender and of past education on returns to education.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology 53.456★

Workshop in Urban Sociology

A research-oriented seminar examining aspects of the Ottawa area. These may include patterns of urban growth and change, residential and urban-rural mobility, depending on the research interests of the instructor.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Seminar three hours a week.

Sociology 53.457★

Workshop in Social Psychology

A research-oriented seminar that, depending on the research interests of the instructor, may focus on one or more of the following topics: attribution theory, cognitive social psychology, conformity, ethno-methodology, psychoanalysis or victimology.

Prerequisite: Fourth-year Honours standing or permission of the Department.
Seminar three hours a week.

Sociology-Anthropology 56.458★

Workshop in Political Sociology-Anthropology

A research-oriented seminar that, depending on the research interests of the instructor, may examine voting behaviour, political movements and parties, national and community elites, relations between society and the state, the prehistoric state, and social conflict.

Prerequisite: Fourth-year Honours standing or permission of the Department.
Seminar three hours a week.

Sociology-Anthropology 56.459★

Workshop in Feminist Research and Analysis

A research-oriented seminar that focuses on current issues in feminist research, depending on the research interests of the instructor.

Prerequisite: Fourth-year Honours standing or permission of the Department.
Seminar three hours a week.

Sociology-Anthropology 56.460★

Studies in Applied Semiology

A critical examination of different approaches to the relationship between culture and signs broadly defined, with an emphasis on the concrete workings of symbolism and language from within themselves as well as in the historical context of special cultural environments. "Scripts" taken from different sources - the scriptures, myths, folk narratives, modern literature and art, the media, pornography, children's drawings - are analyzed with a view to illustrating conflicting views on the nature of language.

Precludes additional credit for Anthropology 54.475★ (if taken with the same topic).

Prerequisite: Fourth-year Honours standing or permission of the Department.
Seminar three hours a week.

Sociology-Anthropology 56.465★

Selected Problems in the Study of Ethnic and Race Relations

This seminar is designed to explore the social, political, economic and ideological relevance of ethnicity and "race" in Canada and other Western societies. It examines the efficacy of several theoretical frameworks in elucidating issues such as ethnic inequality, aboriginal rights, racism, ethnic mobilization, and the position of immigrant and minority women.

Prerequisite: Fourth-year Honours standing or permission of the Department.
Seminar three hours a week.

Anthropology 54.470★

Workshop in North American Aboriginal Studies

A research-oriented seminar that, depending on the interests of the instructor, may focus on cultural persistence, cultural or social change, contemporary conditions and struggles, the position of Indians, Inuit and Metis in Canadian society, and conceptions of aboriginality.

Prerequisite: Fourth-year Honours standing or permission of the Department.
Seminar three hours a week.

Sociology 53.471★

Special Topic in Criminal Justice and Social Policy

Examination of a selected topic in criminal justice and social policy. Topics to be announced in advance each year. (Also listed as Law 51.471★ and Social Work 52.571S1.)

Prerequisite: Permission of the Department.
Hours to be arranged.

Sociology 53.472★

Special Topic in Criminal Justice and Social Policy

Examination of a selected topic in criminal justice and social policy. Topics to be announced in advance each year. (Also listed as Law 51.472★ and Social Work 52.572S1.)

Prerequisite: Permission of the Department.
Hours to be arranged.

Sociology 53.473★

Special Topic in Criminal Justice and Social Policy

Examination of a selected topic in criminal justice and social policy. Topics to be announced in advance each year. (Also listed as Law 51.473★ and Social Work 52.573S1.)

Prerequisite: Permission of the Department.
Hours to be arranged.

Sociology 53.474★

Youth Culture and Juvenile Justice

This course provides an overview of the establishment and development of a separate and distinct system of justice for youth in Canada. This includes an analysis of juvenile justice policy in relation to both juvenile crime patterns and the impact of youth culture. Particular emphasis is placed on the creation and implementation of the federal Young Offenders Act and the consequences that this has had for the juvenile justice system in Canada.

Prerequisite: Fourth-year Honours standing or permission of the Department.
Seminar three hours a week.

Anthropology 54.475★

Workshop in Signs and Symbols

A research-oriented seminar that, depending on the interests of the instructor, may focus on one or more of the following topics: psychoanalysis, structuralism, post-structuralism, post-modernism, feminism, critical theory, historical anthropology, neuroanthropology, or phenomenology.

Prerequisite: Fourth-year Honours standing or permission of the Department.

Anthropology 54.476★

Workshop in Development and Underdevelopment

A research-oriented seminar that, depending on the interests of the instructor, may focus on one or more of the following topics: domestic economies, peasant production, forced labour, capital-dominated markets, and theories of underdevelopment and colonialism.

Prerequisite: Fourth-year Honours standing or permission of the Department.
Seminar three hours a week.

Sociology 53.480★

Masculinity and Power

An examination of masculinity as a social construct; of relationships between masculinity and femininity as they constitute a field of power relations; and of social and discursive practices by which masculinity is re-constituted, historically, and in contemporary times.

Precludes additional credit for Sociology 53.480★, Men's Studies, and Sociology 53.485★ (if taken with the topic Men's Studies).

Prerequisite: Fourth-year Honours or graduate standing, or permission of the Department.

Seminar three hours a week.

Sociology 53.482★

Sexuality and Human Reproduction

Sexuality and human reproduction have formed a significant terrain of feminist politics in both the First and Second Waves of the women's movement. This course examines recent feminist contributions to understanding the political economy of women's sexuality and reproduction. State and medical regulatory practices are analyzed, together with feminist contributions to theorizing sexual subjectivity and representations of the female body.

Precludes additional credit for Sociology 53.485★ (if taken in 1989-90 and 1990-91).

Prerequisites: Fourth-year Honours standing and Sociology 53.247 or equivalent, or permission of the Department.

Seminar three hours a week.

Sociology 53.485★

Contemporary Problems in Sociology

Selected problems in sociology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

Sociology 53.486★

Contemporary Problems in Sociology

Selected problems in sociology, not ordinarily treated in the regular course program. The choice of topics varies from year to year. Students should check with the Department regarding the topic offered.

Sociology 53.491★ and 53.492★

Anthropology 54.491★ and 54.492★

Tutorial in Sociology or Anthropology

See explanatory note, p. 492.

Sociology 53.495, Anthropology 54.495

Honours Practicum

At the end of their final year, Honours candidates are required to present a major research essay. Students present their essay proposals for discussion and criticism to fellow students and faculty, and report periodically upon the paper's progress. Common problems of conceptualization, research design, analysis and interpretation are taken up for consideration.

Prerequisite: Fourth-year Honours standing.

Graduate Courses

Fourth-year Honours students are encouraged to take one or more graduate seminars, which are available to them with the permission of the Department. A variety of theoretical, substantive and methodological courses are available. Specific details are contained in the 1996-97 *Calendar of the Faculty of Graduate Studies and Research*.

(Arts)

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Academic Administration

Chair
P.J. Roster

Assistant Chair
M.A. Giella (Fall)
F.J. Hernández (Winter)

Supervisor of Graduate Studies
F.J. Hernández

Supervisor of Undergraduate Studies
R. Larson

Supervisors of Language Courses
M.A. Giella (Fall)
J.L. Urbina (Winter)

Director of Winter Program Abroad
M.A. Giella

Teaching Staff

Professors
F.J. Hernández
J. Jurado
P.J. Roster

Associate Professors
M.A. Giella
R. Larson
C.A. Marsden

Assistant Professor
J.M. López-Saiz

Adjunct Professor
F. Atienza

Instructor
J.L. Urbina

General Information

The Department of Spanish offers both Pass and Honours programs. Classes are generally conducted in Spanish, and laboratory instruction, an integral part of courses at the introductory and intermediate levels, is also available to students in the more advanced language courses.

The Department offers introductory Portuguese when there is a sufficient number of interested students.

Lists of prescribed texts and supplementary reading for all courses are available from the Secretary of the department.

Students are encouraged to take advantage of the favourable atmosphere for informal practice of the language provided by La Sociedad Hispánica (Hispanic Society).

Graduation Regulations

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all departmental regulations and requirements as set out below.

Acceleration and Intensive Spanish

Students who are beginning the study of Spanish at university, and who are considering Spanish as a Major, should take note of Spanish 38.120 Intensive Introductory Spanish (two credits), 38.204 Intensive Intermediate Spanish and 38.220 Intensive Advanced Spanish, all designed specifically for potential Majors; and the Intensive Spanish Program, a year which includes a term abroad devoted exclusively to the study of Spanish (see below).

Intensive Spanish Program and Winter Program Abroad

The Intensive Spanish Program is a year devoted exclusively to the study of Spanish. The program is divided into Fall term and Winter term. Students may enrol in either of the two terms or in both. This program will not be offered in the event of insufficient enrolment.

First year students may select this intensive language program but they should be aware that failure to complete it successfully could limit academic options in the next session (see *Arts and Social Sciences Regulations: 8.2*). Please consult the Registrarial Services Office in your Faculty or the Department of Spanish **before** making this commitment.

Fall Term: Language Acquisition

The Fall term of the Intensive Spanish Program, offered at Carleton, is designed to provide a maximum of acceleration in language acquisition to well-motivated students with little or no previous training in Spanish. While intended for the beginning student, the program is flexible enough to accommodate students who already have a grade of C+ or better in OAC Spanish or in Spanish 38.115 or the equivalent. Such students may audit the introductory unit (Spanish 38.115) of the program but may receive only an additional 1.5 credits upon successful completion of the Fall term.

The full Fall term covers the following courses:

38.115	Introductory Spanish
38.203	Intermediate Spanish
38.205★	Spanish Conversation

This program entails 15 hours of class a week plus language laboratory instruction and practice for a total of up to 2.5 credits.

During the Fall term, students are charged with the responsibility of spending, together with the other members of the program, as much time as possible outside the classroom under the guidance of a "group leader" (a senior student in Spanish), who will encourage them to practise whatever material they are being exposed to in class, and who will organize drill sessions and other activities for the purpose of reinforcing what the students are learning during regular classroom hours. After successful completion of the Fall term, students have the option of joining the Winter term of the Intensive Spanish Program or enrolling in up to 2.5 credits in the subjects of their choice.

Winter Term: Language and Civilization

During the Winter term the program is held in a Spanish-speaking country (currently Spain), where students continue their studies by taking another 2.5 compressed credits in Spanish.

Courses available abroad are:

Spanish

- 38.206★ Spanish Composition
- 38.210★ Spanish Civilization
- 38.211★ Spanish American Civilization
- 38.301★ Advanced Spanish Conversation
- 38.302★ Advanced Spanish Composition

The program requires 15 class hours a week plus regular field trips. Attendance is compulsory, subject to the usual exceptions.

The cost of the program, including university fees and room and board, is about the same as the cost of a similar period of full-time study spent at Carleton, plus air fare. Financial assistance is available in the form of the Sara Helen Parry Hughes Travel Award. For terms see Awards and Financial Assistance section of this Calendar.

Admission Requirements

Admission to the Winter Program Abroad (Winter term) is limited to students who have (a) completed the Intensive Spanish Program, Fall term; or (b) have a credit in an intermediate-level Spanish course and Spanish 38.205★ or the equivalent.

Second- or Third-year Spanish Majors who wish to take only this second half of the program are advised to take Spanish 38.205★, and four other half credits from those available in other disciplines during the Fall term. Non-Majors wishing to enrol in the program should consult not only the Department of Spanish concerning the program, but also their Major departments (chosen or intended) to arrange a Major program that will permit the necessary absence from Ottawa.

Interested students should apply to M.A. Giella, Director of the Winter Program Abroad (Winter term), Spanish Department, preferably not later than October 15, 1996.

Pass Programs

Interested students must consult the Department as early as possible to plan their program. General requirements are as laid down on p. 71. A Pass program in Spanish normally consists of 5.0 credits after Spanish 38.203, 38.204, or 38.120; Spanish 38.210★ and 38.211★ are compulsory, and 3.0 literature survey credits at the 300-level must be taken. A Combined Pass program consists of 4.0 credits beyond the intermediate level, to include Spanish 38.210★, 38.211★ and 2.0 literature survey credits at the 300-level.

Minimum Requirements for Pass and Honours Students

The Department requires Pass and Honours students to have a grade of C- or better in each required literature course at the 300- or 400-level or an average of C overall in these courses.

Honours Programs

Honours in Spanish

General regulations concerning Honours programs are to be found on p. 76. The Honours program in Spanish is designed to give the student a thorough knowledge of Hispanic language and literature. Lectures and seminars cover the origins and evolution of the language, the principal periods of Spanish and Spanish American literature, and include some study of allied literatures with a view to further work at the graduate level. The program consists of 8.0 credits beyond the intermediate level to include Spanish 38.210★, 38.211★, 3.0 literature survey credits at the 300-level and at least 2.0 literature credits at the 400-level. For an explanation of Honours standing see p. 76.

Combined Honours in Spanish and French

This program is recommended especially for students wishing to enter a Faculty of Education in one of the Ontario universities after completion of the B.A. with a view to becoming a language teacher in a secondary school. 6.0 credits beyond the intermediate level are required in each language. Required courses in Spanish are 38.210★, 38.211★, 2.0 literature survey credits at the 300-level and at least 1.0 literature credit at the 400-level.

Other Combined Honours Programs

Students interested in pursuing an Honours program in which Spanish is combined with another discipline are invited to discuss the matter with the Supervisor of Honours in the Department of Spanish. The minimum requirements are 6.0 credits beyond the intermediate level in Spanish, to include Spanish 38.210★, 38.211★, 2.0 literature survey credits at the 300-level and at least 1.0 literature credit at the 400-level.

Graduate Courses

Students in Fourth-year Honours may take a maximum of 2.0 credits at the 500-level with special permission of the Graduate Studies Committee of the Department of Spanish. These courses are listed separately in the *Graduate Studies and Research Calendar*.

Prerequisites

All students wishing to enrol in a course for which they do not have the prerequisite must obtain the permission of the Department.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Note:

Students who have already taken any of the following full-credits (no longer offered) may not enrol for additional credit in either of the corresponding half-credits introduced in 1980-81: Spanish 38.210 (38.210★, 38.211★), 38.320 (38.320★, 38.321★), 38.330 (38.330★, 38.331★), 38.350 (38.350★, 38.351★), 38.415 (38.415★, 38.416★), 38.420 (38.420★, 38.430 (38.430★, 38.431★), 38.435 (38.435★, 38.436★), 38.440 (38.440★, 38.441★), 38.460 (38.460★, 38.461★), 38.470 (38.470★, 38.471★).

Students should note that before 1992-93, Spanish 38.203 was numbered 38.150, 38.204 was 38.151, 38.205★ was 38.201★, and 38.206★ was 38.202★.

Spanish 38.115

Introductory Spanish

A course for those with no knowledge of Spanish, designed to give the student the fundamentals of spoken and written Spanish, through oral practice, reading and laboratory work.

Lectures and laboratory four hours a week.

Also offered in Intensive Spanish Program.

Spanish 38.120 (2.0 credits)

Intensive Introductory Spanish

A course designed for students with little or no knowledge of Spanish. Using an intensive approach to Spanish, students can attain in one year the level of proficiency and fluency normally gained in Spanish 38.115 and 38.203. Students not making satisfactory progress will be transferred to the regular introductory course (Spanish 38.115).

Lectures and laboratory six hours a week.

Spanish 38.203

Intermediate Spanish

A course for those with at least one year of Spanish. Grammar review, extensive reading, guided composition, laboratory work.

Prerequisite: Spanish 38.115 or equivalent.

Lectures and laboratory four hours a week.
Also offered in Intensive Spanish Program.

Spanish 38.204

Intensive Intermediate Spanish

A course for potential Majors and for those with OAC Spanish or equivalent. Review of grammar and some advanced syntax; extensive reading, discussion and composition. Laboratory work.

Prerequisites: Spanish 38.115 or equivalent, and permission of the Department. With special permission of the Department, students enrolled in this course may take Spanish 38.205★ simultaneously.

Spanish 38.205★

Spanish Conversation

Conversation and discussion of current problems, supplemented by occasional written work.

Prerequisite: Spanish 38.203 or 38.204 or 38.120 or permission of the Department.

Three hours a week.

Also offered in Intensive Spanish Program.

Spanish 38.206★

Spanish Composition

A course designed to consolidate the linguistic knowledge attained in Spanish 38.203 and to inculcate the elements of a good Spanish style.

Prerequisite: Spanish 38.203 or 38.204 or 38.120 or permission of the Department.

Three hours a week.

Also offered in Winter Program Abroad.

Spanish 38.210★

Spanish Civilization

The cultural heritage of Spain in its social and geographical contexts.

Prerequisite: Spanish 38.203 or 38.204 or 38.120 or permission of the Department.

Three hours a week.

Also offered in Winter Program Abroad.

Spanish 38.211★

Spanish-American Civilization

The cultural heritage of Spanish America in its social and geographical contexts.

Prerequisite: Spanish 38.203 or 38.204 or 38.120 or permission of the Department.

Three hours a week.

Also offered in Winter Program Abroad.

Spanish 38.220 (2.0 credits)

Intensive Advanced Spanish

A course designed for potential majors who have taken 38.115 (or an equivalent introductory course), it combines the material given in 38.203, 38.205★ and 38.206★. Students not making satisfactory progress will be transferred to a different, non-intensive course at the appropriate level.

Successful completion of Spanish 38.220 precludes additional credit for Spanish 38.203, 38.205★, 38.206★.

Lectures and laboratory seven hours a week during the Fall term, six hours a week during the Winter term.

Spanish 38.235

An Introduction to Hispanic Theatre

A study of the theory and practice of dramatic production in Spain and Spanish America together with

detailed analysis and interpretative reading of representative plays. Students in the course are required to participate in the staging of a play.
Prerequisite: Spanish 38.203 or 38.204 or 38.120 or permission of the Department.

Spanish 38.301 ★

Advanced Oral Spanish

An advanced sequel to Spanish 38.205 ★.
Prerequisite: Spanish 38.205 ★ or permission of the Department.
Three hours a week.
Also offered in Winter Program Abroad.

Spanish 38.302 ★

Advanced Spanish Composition

An advanced sequel to Spanish 38.206 ★.
Prerequisite: Spanish 38.206 ★ or permission of the Department.
Three hours a week.
Also offered in Winter Program Abroad.

Spanish 38.303 ★

Spanish Phonetics and Phonology

A descriptive study of the sounds and sound patterns of Spanish. Practical exercises, written and oral. Recommended for teachers.
Prerequisites: Spanish 38.205 ★ and 38.206 ★ or permission of the Department.

Spanish 38.305

Intensive Oral Spanish

An intensive course in Spanish conversation which, being offered only in a Spanish-speaking country, also provides an introduction to Hispanic culture. Students who satisfactorily complete this course are ineligible to enrol subsequently in Spanish 38.205 ★ or 38.301 ★.
Offered only in the Summer session. Compulsory attendance at all classes and participation in all activities.
Prerequisite: Spanish 38.203 or 38.204 or 38.120 or permission of the Department.

Spanish 38.320 ★

The Golden Age I

A study of representative works of Spanish literature of the Renaissance and Early Baroque periods.
Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the Department.
Three hours a week.

Spanish 38.321 ★

The Golden Age II

A study of representative works of Spanish literature of the Baroque period.
Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the Department.
Three hours a week.

Spanish 38.330 ★

Nineteenth-Century Spanish Literature

A study of representative works of the major movements (Romanticism, *costumbrismo*, Realism and Naturalism) and authors of Spanish literature of the nineteenth century.
Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the Department.
Three hours a week.

Spanish 38.331 ★

Twentieth-Century Spanish Literature

A study of representative works of Spanish literature from the Generation of 1898 on.
Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the Department.
Three hours a week.

Spanish 38.350 ★

Spanish-American Literature, 1500-1888

A study of representative works of Spanish-American literature of the Colonial Period and the nineteenth century prior to Modernism.
Prerequisite: Spanish 38.211 ★ or 38.235 or permission of the Department.
Three hours a week.

Spanish 38.351 ★

Spanish-American Literature from Modernism to the Present

A study of representative works of Spanish-American literature since 1888.
Prerequisite: Spanish 38.211 ★ or 38.235 or permission of the Department.
Three hours a week.

Spanish 38.402 ★

Theories of Literature

This course focuses on the theoretical discussion of literature from about 1920 to the present. Included in the study are Russian Formalism, American New Criticism and such other approaches as the structuralist, semiotic, socio-cultural and hermeneutic. Offered by the School of Comparative Literary Studies as Theories of Literature 17.402 ★. Spanish students will register in Spanish 38.402 ★, and will use Hispanic texts for exercises of practical application.
Prerequisite: Permission of the School of Comparative Literary Studies.
Three hours a week.

Spanish 38.415 ★

Medieval Spanish Literature from the Origins through 1300

A study of major works of Spanish literature from the earliest times through the thirteenth century.
Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the Department. Students will normally have taken a literature course at the 300-level before enrolling in this course.

Spanish 38.416 ★

Medieval Spanish Literature, 1300-1500

A study of major works of Spanish literature of the fourteenth and fifteenth centuries.
Prerequisite: Spanish 38.210 ★ or 38.235 or permission of the Department. Students will normally have taken a literature course at the 300-level before enrolling in this course.

Spanish 38.420 ★

Cervantes

A study of Cervantes and his age, with particular reference to *Don Quijote*.
Prerequisites: Spanish 38.320 ★ and 38.321 ★ or permission of the Department.

Spanish 38.430★

Modern Spanish Novel

Analysis and interpretation of works by major Spanish novelists from the beginnings of Realism in the nineteenth century up to the Civil War in 1936.

Prerequisites: Spanish 38.330★ and 38.331★, or permission of the Department.

Three hours a week.

Spanish 38.431★

Contemporary Spanish Novel

Analysis and interpretation of works by major Spanish novelists from the Civil War to the present.

Prerequisites: Spanish 38.330★ and 38.331★ or permission of the Department.

Spanish 38.435★

Modern Spanish Drama

Analysis and interpretation of works by major Spanish playwrights of the nineteenth and early twentieth centuries, together with study of related dramatic theory.

Prerequisites: Spanish 38.330★ and 38.331★ or permission of the Department.

Spanish 38.436★

Contemporary Spanish Drama

Analysis and interpretation of works by major Spanish playwrights from the Civil War to the present, together with study of related dramatic theory.

Prerequisites: Spanish 38.330★ and 38.331★ or permission of the Department.

Spanish 38.440★

Modern Spanish Poetry

A study of Spanish poetry and poetics of the nineteenth and early twentieth centuries.

Prerequisites: Spanish 38.330★ and 38.331★ or permission of the Department.

Spanish 38.441★

Contemporary Spanish Poetry

A study of Spanish poetry and poetics from the Generation of 1927 to the present.

Prerequisites: Spanish 38.330★ and 38.331★ or permission of the Department.

Spanish 38.460★

Twentieth-Century Spanish-American Novel I

Analysis and interpretation of works by major Spanish-American novelists of the first half of the twentieth century. The regionalistic novel of social realism, including novels of the Mexican Revolution, the pampa, the jungle and the Andes.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the Department.

Three hours a week.

Spanish 38.461★

Twentieth-Century Spanish-American Novel II

Analysis and interpretation of works by major Spanish-American novelists of the first half of the twentieth century. Novels of universal theme, especially reflecting artistic, philosophical and psychological concerns.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the Department.

Spanish 38.470★

Twentieth-Century Spanish-American Poetry I

A study of the principal tendencies in twentieth-century Spanish-American poetry with special emphasis on the modernist poets, the post-modernist *poetisas* and the creationism of Vicente Huidobro.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the Department.

Spanish 38.471★

Twentieth-Century Spanish-American Poetry II

A study of the principal tendencies in twentieth-century Spanish-American poetry, with special emphasis on the social poetry of César Vallejo, Nicolás Guillén and Pablo Neruda.

Prerequisites: Spanish 38.350★ and 38.351★ or permission of the Department.

Spanish 38.490

Seminar on a Special Topic

Designed for Honours students normally in their final year, or for Graduate students.

Spanish 38.491★

Seminar on a Special Topic

Designed for Honours students normally in their final year, or for Graduate students.

Prerequisites: Spanish 38.350★ and 38.351★, or permission of the Department.

Three hours a week.

Spanish 38.492★

Special Studies

From time to time members of the Department form small groups to study certain problems or aspects of Spanish literature in greater depth than is possible in other courses. Interested students should consult the Department.

Three hours a week.

• **Portuguese Course**

Portuguese 38.116

Introductory Portuguese

A course designed to provide the student with the fundamentals of Portuguese grammar, a basic vocabulary and speaking knowledge of Portuguese. Students who have taken courses in other Romance languages should make considerable progress.

Department of Systems and Computer Engineering

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(Engineering)

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Academic Administration

Chair
S.A. Mahmoud

Teaching Staff

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A.R. Kaye
S.A. Mahmoud
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Associate Professors

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R.A. Goubran
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B.W. Tansley

Assistant Professors

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T. Pearce
D.C. Petriu
J.A. Rolia

Adjunct Research Professors

G.D. Boudreau, *MPR Teltech Ltd.*
A.J. Brammer, *National Research Council*
R.J.C. Bultitude, *Communications Research Centre*
N.W. Dawes
M. Devetsikiotis
L.S. Marshall, *Bell-Northern Research*
J.W. Miemik, *Bell-Northern Research*
A. Obaid, *Université du Québec à Hull*
W. Older, *Bell-Northern Research*

Instructor
D.L. Bailey

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Engineering 94.202★/94.302★

Program Design and Construction

In-depth experience in the design and construction of computer programs involving data structures and different programming paradigms. Data structures, formal specification, abstract data types, graphs, recursion, finite state machines and object-oriented programming.

Prerequisites: Engineering 91.166★ and 91.167★ or equivalent.

Lectures and tutorials three hours a week, problem analysis two hours a week.

Computer Systems Engineering Students take Engineering 94.202★ (precludes additional credit for Engineering 94.302★).

Electrical and Aerospace (Stream C) Engineering Students take Engineering 94.302★ (precludes additional credit for Engineering 94.202★).

Engineering 94.203★/94.303★

Introduction to Real-Time Systems

An introduction to the use of microprocessors as real-time, interactive systems, using 8088-based PCs as the primary example. Computer organization: register structure; representation of instructions, numbers and characters; addressing modes; instruction set. Programming techniques: assembly language coding, interfacing to high level languages, symbolic debugging. Input/output methods: polling, priority and vectored interrupts, direct memory access. Peripherals: keyboard, video displays, programmable timer, parallel and serial devices, A/D and D/A converters. Numeric coprocessors. Real-time systems: concurrency, time constraints, software issues. Applications to digital signal processing and data communications. If time permits, other processor architectures will be examined.

Precludes additional credit for Computer Science 95.203★.

Prerequisites: Engineering 91.166★ and 91.167★ or equivalent.

Lectures and tutorials three hours a week, laboratory two hours a week.

Computer Systems Engineering Students take Engineering 94.203★ (precludes additional credit for Engineering 94.303★).

Electrical and Aerospace (Stream C) Engineering Students take Engineering 94.303★ (precludes additional credit for Engineering 94.203★).

Engineering 94.260★/94.360★

Systems and Simulation

Properties of linear systems. Linear dynamic models of engineering systems. Applications of the Laplace transform. Transfer functions. Block diagrams. Frequency and time response. System simulation with digital computers.

Prerequisite: Second-year registration for Engineering 94.260★ and Third-year registration for Engineering 94.360★.

Offered as Engineering 94.360★.

Lectures and tutorials three hours a week, laboratory and problem analysis three hours a week. Precludes additional credit for Engineering 94.260★.

Offered as Engineering 94.260★.

Lectures and tutorials three hours a week, laboratory and problem analysis three hours a week.

Precludes additional credit for Engineering 94.360★.

Engineering 94.301★

Operating Systems and Data Bases

Operating systems and data base systems treated from a common perspective. Principles of management of process, memory, files and data. Implications of concurrency. Data models and query languages. Precludes additional credit for Computer Science 95.300★ or 94.401★.

Prerequisite: One of Engineering 94.203★ or Computer Science 95.203★ or equivalent experience.

Lectures three hours a week.

Engineering 94.310★

Systems Analysis

Introduction to the concepts and techniques of analysis of complex problems: converting an ill-defined problem into a set of specifications for a solution. The area of application is computer-based information and real-time control systems. Topics include the software lifecycle, functional decomposition by data flow modelling, data dictionaries, process representation, database modelling by entity-relationship diagrams, real-time systems analysis, management of the analysis process, and a brief introduction to the design phase.

Prerequisites: Engineering 91.166★ and 91.167★ or equivalent.

Lectures three hours a week.

Engineering 94.320★

Industrial Engineering

This course introduces techniques of operations research used for decision-making in complex engineering systems. Topics include linear programming, network models, PERT, integer programming, dynamic programming, queuing systems and inventory theory. Problem-solving is emphasized.

Precludes additional credit for Mathematics 69.381★, Economics 43.404★, or Business 42.230★.

Prerequisite: Engineering 91.266★.

Lectures three hours a week.

Engineering 94.333★

Real-Time Concurrent Systems

Introduction to the principles and practice of an engineering approach to design and implementation of real-time, concurrent systems. Nature of real-time concurrent systems; capturing designs for such systems with an object-oriented visual notation; basic problems of real-time and concurrency and examples of design solutions in terms of internal objects and interface objects; composing system designs from component object designs; evaluating designs; relationship of design objects to implementation objects; mapping from designs to implementations. The course includes a substantial programming project using a particular multitasking implementation technology as a practical example.

Prerequisites: Engineering 94.202★ and 94.203★ or 94.303★.

Lectures two hours a week, laboratory three hours a week.

Engineering 94.351★

Communication Theory

Representation of signals; review of Fourier series; Fourier transforms; frequency and time domain representation of signals; representation of signals by transmission of samples; signals through channels; convolution, distortion, power and energy spectra; random variables and processes, description of noise, auto correlation; noise in communication networks; noise bandwidth; noise figure. Analog modulation: amplitude modulation and demodulation; DSB, SSB and VSB. Exponential modulation; FM/PM spectra, modulators and demodulators, PLL. Noise performance of AM, FM systems. Application of analog modulation systems.

Prerequisites: Engineering 94.260★/94.360★ and Mathematics 69.375★.

Lectures three hours a week, laboratory three hours, alternate weeks.

Engineering 94.361★

Microprocessor Systems

The course deals with the various interfacing aspects in microprocessor systems. It starts with an overview of existing microprocessors and bus structures, followed by a detailed study of the internal architecture, the instruction set, and the pin functions of a specific microprocessor. Then, it addresses memory interfacing and input-output subsystems. Interrupt structures, direct memory access, input/output processors, and multiprocessor systems are discussed.

Precludes additional credit for Computer Science 95.306★ and Engineering 97.461★.

Prerequisites: Engineering 97.267★/97.367★ and 94.203★/94.303★ or permission of the Department. Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 94.362★

Electric Power Circuits and Machines

Single phase and three phase A.C. circuits: phasors, voltage, current, and power calculations, flicker, power factor correction, asymmetry, star and delta configurations. Power measurement and rate structures. Single phase transformer: construction, theory of operation and equivalent circuit, OC/SC tests, three phase connections, name plate data and specifications. Three phase induction motor and synchronous motor: construction, theory of operation and equivalent circuits, calculations, starting. Discussion of single phase motors.

Prerequisite: Engineering 97.261★.

Engineering 94.395★

Professional Practice Seminar

This course is intended to familiarize future professional engineers with current engineering practice and its relationship to other disciplines and to society in general. A sequence of seminars is presented by faculty and external lecturers covering topics such as the Professional Engineers Act, professional ethics, responsibilities of professional engineers and engineering practice appropriate to the discipline. Also

included are seminars on the impact of technology on society. The development of communication skills, both oral and written, is emphasized. (Also listed as Engineering 97.395★.) Grades for this course are *Sat* (satisfactory), or *Uns* (unsatisfactory). Precludes additional credit for Engineering 82.495★ and 86.495★.
Prerequisite: Third-year registration.
Seminar three hours a week.

Engineering 94.401★
Operating Systems

An introduction to operating system principles, concurrent programs, system nucleus, structure of kernel, memory management, resource allocation and scheduling, dead-lock problems and file systems. Precludes additional credit for Computer Science 95.300★ or Engineering 94.301★.
Prerequisite: One of Engineering 94.203★/94.303★ or Computer Science 95.203★ or equivalent experience.
Lectures three hours a week.

Engineering 94.405★
Discrete Simulation and its Applications

Simulation as a problem-solving tool. Random variate generation, general discrete simulation procedure: event table and statistical gathering. Analyses of simulation data: point and interval estimation. Confidence intervals. Network modelling, simulation and problem solving using SLAM. Other simulation languages.
Prerequisite: Fourth-year registration or permission of the Department.
Text: Pritsker, *Introduction to Simulation and SLAMII*.
Lectures three hours a week, problem analysis one hour a week.

Engineering 94.415★
Engineering Management

An introductory and overview course on modern management concepts; material is presented through lectures, seminars and case studies. Historical review. Basic elements, tasks, functions and activities of the management process including planning, organizing, staffing, directing and controlling. Dilemmas and constraints. Management style. Guest lecture on collective bargaining, on the psychology of management, etc. On completing the course the student should be able to: read and constructively criticize management literature; discuss "management" with experts in a rational manner; appreciate the management basis of the first engineering work situation.
Prerequisite: Fourth-year registration.
Lectures two hours a week, seminars three hours alternate weeks.

Engineering 94.445★
Discrete Time Systems

Discrete time signal and system representation: time domain, z-transform, frequency domain. Sampling theorem. Digital filters: design, response, implementation, computer-aided design. Spectral analysis: the discrete Fourier transform and the FFT. Applications of digital signal processing.
Prerequisite: Engineering 94.260★/94.360★
Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 94.455★

Automatic Control Systems I

Review of Laplace transform techniques. Effects of feedback: frequency response, pole-zero positions. Compensation: root locus, Bode plots. State variables: formulation, solution of linear systems, examples of simple second-order non-linear systems. Discrete time systems: z transforms. Signal reconstruction.
Prerequisites: Mathematics 69.201 and Engineering 94.260★/94.360★
Lectures and tutorials three hours a week, laboratory three hours alternate weeks.

Engineering 94.457★
Architecture of Computer Systems

A comprehensive historical review of computing machines from Pascal and Babbage to present-day architectures, emphasis on evolution of concepts, the influence of technology and the techniques evolved to increase performance. A structured view of methodologies (for gate, register and processor design) with particular stress on their limitations. Detailed analysis and design for controllers, processors and memory systems, using existing machines as examples. A range of such component implementations is extended for enhanced performance leading to discussions of super computers. Computer classification schemes are examined. A discussion of systems of computers and related problems.
Prerequisite: Engineering 97.267★/97.367★
Lectures three hours a week.

Engineering 94.460★
Digital Communications

Review of probability and random variables and signal representation. Pulse code modulation and other digital waveform coding techniques. Physical layer of data communications. Baseband data transmission: Nyquist criterion, filtering, optimal receiver, probability of error. Digital modulation techniques and their performance. Synchronization. Introduction to information theory. Error detection and correction techniques. Examples of techniques employed in various digital communications systems.
Prerequisite: Engineering 94.351★.
Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 94.462★
Introduction to Computer Communications

Network architectures, standards organizations. Error detection concepts, data-link control, multiplexing, elementary queues, types of network. Packet switching networks, flow control, error control, routing. ISDN. Local networks, IEEE 802 medium-access control protocols, comparative performance and FDDI. OSI and DoD protocol architectures. Network access protocols and interfaces, X.25 and 802 standards. Internetworking: protocols, bridges. Overview of transport protocols. Introduction to BISDN and network management.
Prerequisite: Fourth-year registration.
Lectures three hours a week, laboratory three hours alternate weeks.

Engineering 94.470★
Telecommunications Engineering
A broad spectrum of topics related to the state of the

art in telecommunications is presented. Topics include: telecommunications as a national and international infrastructure; network architecture from a systems viewpoint including transmission, switching, signalling, and teletraffic; integrated services digital networks (ISDNs), (voice, data, video, etc.); network planning, role of economic studies; network management and control operations; global telecommunications including the International Telecommunication Union; the telecommunications industry (R & D, manufacturing, operations); standards-setting and the role of government, regulation and competition. The course concludes with an overview of telecommunications as a viable business enterprise, the importance of the human factor in its operations, and current issues likely to affect the future development of telecommunications at home and abroad. Lecturers include representatives from telecommunications industry and government as well as from Carleton. Prerequisite: Engineering 94.351★ or the equivalent. Lectures three hours a week; laboratory three hours alternate weeks.

Engineering 94.480★ **Software Engineering**

This course is concerned with technical issues and methodologies for designing systems that may be implemented as sets of software and/or hardware modules. Decomposition of systems into modules; formal definition of modules as packages; systems as sets of packages with formally defined interfaces; graphical tools for specifying and manipulating system designs; data-flow-driven design; concurrency and real time; principles of testing, verification and reliability; case studies of significant programs and design examples; assignments involve both critical evaluation of given designs or programs and independent development of new designs to satisfy given requirements.

Prerequisites: Engineering 94.202★/94.302★, 94.333★ and 94.310★ or the equivalent. Lectures three hours a week; laboratory three hours alternate weeks.

Engineering 94.481★ **Software Engineering Project**

Students participate in a team project to develop a small piece of stand-alone software in an organized and structured fashion. Non-numeric applications are emphasized. All phases of the project are considered equally important: specification, design, implementation, testing and documentation.

Prerequisite: Engineering 94.480★ or concurrent registration.

Tutorial three hours a week.

Engineering 94.485★ **Computer Systems Design Laboratory**

The development of professional-level expertise in converting time-constrained requirements into suc-

cessful real-time hardware-software systems. Student teams hone and integrate previously acquired knowledge by designing, implementing and testing a complete, medium scale, real-time project. Lectures support the lab activities, covering such topics as: project planning and management, software configuration management, testing and debugging strategies and techniques. Students are encouraged to enrol in both Engineering 94.480★ and Engineering 94.485★ in the same academic year.

Prerequisites: Engineering 94.333★, 94.361★/97.461★ and 94.480★, registration in Fourth-year Computer Systems Engineering. Lectures two hours a week, laboratory four hours a week.

Engineering 94.496★ **Special Topics in Electrical and Computer Systems Engineering**

At the discretion of the Faculty, a course dealing with selected advance topics of interest to Electrical and Computer Systems engineering students may be offered. (Also listed as 97.496★).

Prerequisite: Permission of the Department.

Engineering 94.497 or 94.498

Engineering Project

As part of the Fourth-year program, each student is required to select and complete a major project in engineering analysis, design, development or research. The objective is to provide an opportunity to develop initiative, self-reliance, creative ability, and engineering judgment. The results must be submitted in a comprehensive report with appropriate drawings, charts, bibliography, etc. Each student is required to submit his or her engineering project proposal to the Chair of the Department of Systems and Computer Engineering on or before the last day of classes in September.

Note:

Students in the Electrical Engineering degree program whose engineering project is under the supervision of a faculty member within the Department of Electronics should register in Engineering 97.497; those whose project is under the supervision of a faculty member in the Department of Systems and Computer Engineering should register in Engineering 94.497.

Students in the Computer Systems Engineering degree program whose engineering project is under the supervision of a faculty member within the Department of Electronics should register in Engineering 97.498; those whose project is under the supervision of a faculty member in the Department of Systems and Computer Engineering should register in Engineering 94.498.

(Science)

Academic Administration

Chair
Peeter Kruus

Members of the Committee

B. Bums
J. Carson
W. Lawson
J. Marshall
I. Munro
S. Richer
P.D. van der Puije
C. Wyndham

Teaching Staff

Adjunct Professors

J.M. Gilmour
R. Voyer
C.G. Widstrand

Sessional Lecturers

J. Buschek
J. Carson
R. Clayton
R. Voyer
C. Widstrand

General Information

It is becoming increasingly apparent that:

1. The future of the Western societies depends on their ability to cope with the complex problems resulting from the interactions of Technology, Society and the Environment (TSE).
2. The effectiveness of the democratic political process is contingent upon the perception and comprehension of these phenomena by the electorate.
3. Because of the complexity and the wide range of the problems involved, their understanding cannot be gained through specialized education in traditional disciplines. A multidisciplinary approach is required.

The multidisciplinary courses listed below, offered under the direction of the TSE Studies Committee, seek to fulfil this need. They are designed to provide students from all faculties with a solid basis for understanding the major problems of industrialized society, and with firsthand appreciation through research project work, of the complexities involved. The TSE courses are open to all students beyond the First year; these courses are especially recommended for students at the Third- and Fourth-year levels. Students enrolled in three-year programs, however, who would like to take these courses are encouraged to take TSE 59.300 in the Second year.

Students may also submit a coherent pattern of courses in TSE Studies for a B.A. (Directed Interdisciplinary Studies), in accordance with the procedures described for this degree in the Calendar, p. 333. Assistance in planning such a pattern is available from members of the TSE Committee.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

**Technology, Society, Environment 59.300
Interactions in Industrial Society**

A course intended to introduce students from all faculties to the study of the major problems of industrialized society. Topics covered include: historical perspectives of technology and industrialization, technology as a motive force in history and as an element of culture, population growth, impact of technology on the natural environment (e.g. climate, ecological balances), utilization of renewable and non-renewable resources, current and potential future energy resources, modernization (especially with regard to developing countries), technology as an agent of global integration. Much of the analysis is based on case studies. Group workshops are a major part of the course and are given considerable weight in the final grading. A number of lecturers from within and outside the University will participate. Precludes additional credit for TSE 59.350★. Prerequisite: Second-year standing or equivalent. Lectures and workshops three hours a week.

**Technology, Society, Environment 59.350★
Interactions in Industrial Society**
Identical to TSE 59.300, but without participation in group workshops.
Precludes additional credit for TSE 59.300.
Lectures three hours a week.

**Technology, Society, Environment 59.401★
Technology and Society: Assessment**
The course examines the complexities and practice of evaluating the relationship and impact of technology on society and the physical environment. Specific topics include: risk analysis; cost-benefit analysis; regulation of technology; retrospective assessment of projects; necessary aspects of an assessment project; examples of technology assessments. A project in the last portion of the course comprises a significant portion of the course work. A number of lecturers from government and the University will participate.
Prerequisite: Third-year standing or equivalent.
Lectures and workshops three hours a week.

**Technology, Society, Environment 59.402★
Technology and Society: Forecasting**
The objective of the course is to introduce the participants to the forecasting methods that are used in government and industry. Topics are also covered that should indicate how an activity such as forecasting fits into the context of industrial society. Roughly

half the time in the course is used to present various methods used in forecasting: trend analysis, Delphi techniques, normative forecasting, scenario development, and modelling. These methods are illustrated by in-class projects and a major group forecasting project. This coverage of methods is interspersed with discussion of related topics, such as: successes (and failures) of forecasts in history, science fiction writers as forecasters, ideological views of forecasting and the future, analysis of the processes of invention and innovation, and technology policy. A significant number of guest lecturers are involved in the course.

Prerequisite: Third-year standing or equivalent.

Lectures and workshops three hours a week.

Technology, Society, Environment 59.403★

Technology and Society: Innovation

The course examines the process of technological and social innovation, with special emphasis on the Canadian context. Specific topics include: historical examples of innovation; the relation of technological and social innovation to economic development; analysis of the steps in innovation; impact of innovation on employment; impediments to and incentives for innovation in Canada. A number of lecturers from industry, government and the University will participate in the course. A significant portion of the final grade will be based on the results of group research projects.

Prerequisite: Third-year standing or equivalent.

Lectures and seminars three hours a week.

Technology, Society, Environment 59.405★

Technology and Society: Information

The course is designed to develop participant understanding of the nature of information: its electronic creation, manipulation, communication and storage; its effects on individuals and social groups; and directions for research and social action. Various Canadian automated information system applications are introduced, with emphasis on user contexts. Perspectives include aspects such as: human-computer interfacing; the information society; changing communication networks brought about by the electronic revolution; business/organizational structures; the commoditization of information and market control; the control of information access; intellectual property and freedom of information; privacy and the control of truth. Some of the lectures are given by government and industry experts in the Ottawa area. The course includes a group project, individual assignments, and a final examination.

Prerequisite: Third-year standing or equivalent.

Lectures and workshops three hours a week.

Technology, Society, Environment 59.406★

Technology and Society: Work

The course explores the nature and varieties of work, and centres work in the complex relationship between the individual, technology, and society. Topics covered include the history and evolution of work; technologies of work and systems; the shift from the individual to the organizational; underlying economic and political philosophies; psychological perspectives; management factors; and changes in the nature of worklife. Selected Canadian issues and public policy matters are covered. Participants will identify current challenges such as the effect of electronic

communication in the workplace; the effect of structural changes on individuals and groups; legal and human rights issues; human-computer interactions; and modification to work style. Some of the lectures will be given by industry and government experts. The course includes a group project, individual assignments, and a final examination.

Prerequisite: Third-year standing or equivalent.

Lectures and workshops three hours a week.

Other Related Courses

Other courses related to the TSE area offered by various departments and schools within the University are listed for the convenience of students. Detailed course descriptions are given under the appropriate faculty or department. Please note that all prerequisite conditions prescribed for these courses must be met.

Architecture

- 76.105★ Architectural Thought and Contemporary Society
- 76.302★ History of Canadian Architecture
- 76.318★ Design of Cities
- 76.319★ Theory of City Form
- 76.423★ Society and Shelter
- 77.101★ Introduction to Technology and Architecture
- 77.135★ The Nature and Behaviour of Materials
- 77.300★ Lighting for Architecture
- 78.340★ City Organization and Planning Processes
- 78.350★ The Development of Human Shelter

Biology

- 61.192★ Natural History
- 61.216★ Human Genetics and Evolution
- 61.391★ Biology in Society
- 61.393★ Biology and Development of Renewable Resources
- 61.430★ Topics in Applied Environmental Microbiology
- 61.431★ Current Topics in Biotechnology

Chemistry

- 65.100 General Chemistry
- 65.103★ The Chemistry of Food, Health and Drugs
- 65.280★ Environmental Chemistry
- 65.370★ Industrial Applications of Chemistry
- 65.380★ The Chemistry of Environmental Pollutants
- 65.480★ Atmospheric Chemistry

Classics

- 13.235 Ancient Science and Technology

Earth Sciences

- 67.100 Introduction to Geoscience
- 67.238★ Earth, Resources and Society

Economics

- 43.100 Introduction to Economics
- 43.363★ Introduction to Economic Development
- 43.365★ The Economics of Planning
- 43.385★ The Economics of Natural Resources

Engineering

- 82.433★ Urban Planning (also Geography 45.433★)
- 82.334★ Transportation (also Geography 45.434★)
- 82.440★ Construction/Project Management
- 82.495★ Professional Practice

English Language and Literature

- 18.207 Literature and the Sciences

Environmental Science

- 62.150★ Environmental Science Seminar (Open to Environmental Science Majors only)

Film Studies

- 19.333 Film and Society

Geography

- 45.102★ Geographic Analysis of Contemporary Issues: Environment, Economy and Resource Use
- 45.211★ Physical Basis of Environmental Management
- 45.220★ Geography of the Global Economy
- 45.230★ The Cultural Landscape
- 45.231★ Conflict and Accord in the Modern World
- 45.329★ Sustainable Development and Third World Environments
- 45.330★ Sustainable Development in Sub-Saharan Africa
- 45.336 Resource Analysis in Geography
- 45.351★ Northern Lands
- 45.404★ Environmental Impact Assessment
- 45.445★ Land Resource Use

History

- 24.221 Roots of Scientific Thought
- 24.234 Canadian Social History
- 24.239★ Canadian Urban History
- 24.254 Introduction to the History of Women
- 24.421 Science and Technology in the Canadian Experience

Law

- 51.205 Introduction to Public Law
- 51.305★ Law and Regulation
- 51.325★ Consumer Law
- 51.352★ Communication Law II (also Mass Communication 27.352★ and Journalism 28.352★)
- 51.355★ Law Reform and the Protection of Life
- 51.380★ Law of Environmental Quality
- 51.465★ Contemporary Issues in Public International Law

Mass Communication

- 27.305★ International Media Systems
- 27.342★ On Television
- 27.343★ Communication Technology and Culture
- 27.410★ Special Topic: Media and Gender
- 27.450★ Mass Media and Capitalist Democracy I
- 27.451★ Mass Media and Capitalist Democracy II

Philosophy

- 32.184★ Introduction to Environmental Ethics
- 32.284★ Environments, Technology and Values
- 32.332★ Issues in the Philosophy of Science
- 32.351 Philosophy of Computing

Physics

- 75.101★ Introductory Physics I
- 75.102★ Introductory Physics II
- 75.291★ Physics of the Environment I
- 75.292★ Physics of the Environment II

Political Science

- 47.306★ Social Power in Canadian Politics
- 47.319★ The Politics of Law and Morality
- 47.341★ Canadian Public Administration
- 47.342★ Canadian Public Policy
- 47.346★ Public Affairs Policy
- 47.367★ Canadian Defence Policy
- 47.402★ Policy Seminar: Problems of Northern Development
- 47.403★ Politics and the Media
- 47.508★ The Politics of Energy and the Environment

Psychology

- 49.100 Introduction to Psychology
- 49.210★ Introduction to Social Psychology
- 49.220★ Biological Foundations of Behaviour
- 49.270★ Introduction to Cognitive Psychology
- 49.311★ Social Problems
- 49.313★ Group Processes in Social Psychology
- 49.322★ Sensory Processes
- 49.344★ Sport and Performance Psychology
- 49.345★ Psychology of Motivation and Emotion
- 49.372★ Perception
- 49.405★ Psychological Aspects of Product Design Methodology

Science

- 60.100 Science for Today
- 60.200 Science of the Environment

Sociology and Anthropology

- 54.206★ Cultural Adaptations and the Environment
- 54.275★ Technology, Mind and Culture
- 53.251★ Introduction to Population Studies
- 56.253★ Introduction to Human Ecology
- 53.254★ Urban Sociology
- 53.260★ Community
- 54.333★ Economic Anthropology
- 54.335★ The Prehistory of Human Settlement
- 53.339★ Society and Shelter
- 53.346★ Industrial Sociology
- 53.351★ Methods of Population Analysis
- 56.360 Development and Social Change
- 53.424★ Studies in the Design Professions (also Architecture 76.424★)
- 53.440★ Environment, Ideology and Social Policy
- 53.380 Social Policy
- 53.451★ Workshop in Demography/Human Ecology

(Social Sciences)

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Academic Administration

Director
 Deborah Gorham (*History*)

Associate Director
 Frances Woolley (*Economics*)

Joint Chair in Women's Studies (Carleton University and University of Ottawa)

To be appointed

Fran Klodawsky (*Geography/Women's Studies*)

Susan Whitney (*Women's Studies/History*)

Adjunct Professors

Nancy Adamson (*Co-ordinator, Status of Women Office*)

Helen Levine (*Women's Studies/Social Work*)

Heather Menzies (*Canadian Studies/Women's Studies*)

General Information

In September 1987, Carleton established the Institute of Women's Studies, which was renamed the Pauline Jewett Institute of Women's Studies in September 1993, to honour the distinguished scholar and social activist Pauline Jewett (1922-1992), Chancellor of Carleton University from 1990 to 1992.

The Pauline Jewett Institute continues to expand on the work of its predecessor, the Interfaculty Committee on Women's Studies, established in 1975. The Institute fosters research and study from a feminist perspective and seeks to promote an awareness on the part of all disciplines of the need to include a fuller treatment of women's experience. Joining in this venture is the Chair in Women's Studies, held jointly at Carleton and the University of Ottawa, and housed at Carleton in the Pauline Jewett Institute.

Carleton was one of the first universities in Canada to offer courses on women, beginning with a course on women's history offered first in 1971-72. Since then, courses and programs have developed in several academic units throughout the university. Beginning in the academic year 1989-90, Combined Pass and Combined Honours programs in Women's Studies and a second Arts or Social Sciences discipline have been offered through the Institute of Women's Studies. The Combined Pass program is intended to give students a general overview of the field of Women's Studies. The Combined Honours program requires a deeper study of the methodological and theoretical implications of Women's Studies. Both programs offer interdisciplinary perspectives while also requiring students to develop a disciplinary base for their studies.

Graduation Requirements

In order to graduate, students must fulfil all University graduation regulations (see p. 52) and all Faculty regulations (see p. 81), in addition to all Institute regulations and requirements as set out below.

Combined Pass Program

Students planning a Combined Pass program are advised to consult with the Director of the Institute of Women's Studies.

The requirements for a Combined Pass program in Women's Studies and another discipline are at least 5.0 credits as follows:

1. 09.188 Introduction to Women's Studies
2. 09.280★ Gender and Diversity and 09.281★ Topics in Women's Studies
3. Social Science electives: 1.5 credits from: Anthropology 54.248★, 54.249★, Law 51.301★, Political Science 47.350★, 47.351★, 47.352★, Psychology 49.363★, Sociology 53.247.
4. Arts electives: 1.5 credits from: Comparative Literary Studies 17.302, English 18.292, History 24.254, 24.346★, 24.354, 24.375★, Linguistics 29.273★, Mass Communication 27.355★, Music 30.332★, 30.433★, Philosophy 32.236★, 32.237★, Religion 34.203★, 34.325★.

Other courses may be substituted for the credits specified above in items 3 and 4 (e.g. Law 51.384) when material on gender and/or women's experience is central to the course. Such substitutions must be individually approved by the Institute of Women's Studies.

Combined Honours Program

Students planning a Combined Honours program are advised to consult with the Director of the Institute of Women's Studies.

The requirements for a Combined Honours program in Women's Studies are at least 7.0 credits as follows:

1. 09.188 Introduction to Women's Studies
2. 09.280★ Gender and Diversity and 09.281★ Topics in Women's Studies
3. 09.388 Theory and Methods from a Feminist Perspective
4. Social Science electives: 1.5 credits from: Anthropology 54.248★, 54.249★, Law 51.301★, Political Science 47.350★, 47.351★, 47.352★, Psychology 49.363★, Sociology 53.247.
5. Arts electives: 1.5 credits from: Comparative Literary Studies 17.302, English 18.292, History 24.254, 24.346★, 24.354, 24.375★, Linguistics 29.273★, Mass Communication 27.355★, Music 30.332★, 30.433★, Philosophy 32.236★, 32.237★, Religion 34.203★, 34.325★.

6. 400-level elective.

1.0 additional credit from: Women's Studies 09.490★, 09.491★, 09.492★, 09.498, Business 42.462★, History 24.452, 24.454, 24.459, Law 51.401★, Political Science 47.450★.

Other courses may be substituted for the credits specified above in items 4, 5, and 6 (e.g. Law 51.384, Art History 11.400★) when material on gender and/or women's experience is central to the course. Such substitutions must be individually approved by the Institute of Women's Studies.

Courses

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings for 1996-97, please consult the *Registration Instructions and Class Schedule* booklet published in the summer.

Women's Studies 09.188

Introduction to Women's Studies

A survey course, designed to increase the student's understanding of the position of women in contemporary society. The course offers an introduction to such issues as biological and cultural sex differentiation, women and literature, women and religious institutions, women and politics, women and social and health services and women and the law. A brief introduction to the intellectual and social origins of feminism and a survey of women's place in Western European history provides a context for examining women's position in contemporary society.

Precludes additional credit for Women's Studies 09.288 (no longer offered).

Lectures and discussion three times a week.

Women's Studies 09.280★

Gender and Diversity

How are definitions of gender associated with other social categories? Some of these categories, such as race, ethnicity, class, sexual orientation and ability/disability, affect the experiences of women as individuals and as members of groups. This course explores ways in which cultures generate such definitions, analyses interconnections between them, and examines women's experiences. Students should note that specific course content and theoretical, geographical and temporal focus will vary from year to year.

Women's Studies 09.281★

Topics in Women's Studies

An interdisciplinary analysis of one or more topics in women's studies focusing on the relationship between cultural perceptions of women and women's experiences, and between feminist thought and women's public activism. Possible themes include: "An Introduction to the History of Feminist Thought"; "Interdisciplinary Perspectives on Women's Activism and Social Change"; "Women's Autobiography and Autobiographical Fiction. An Interdisciplinary Approach". The topic for the Fall-Winter session will be announced each year by July 1.

Women's Studies 09.388

Theory and Methods From a Feminist Perspective

This course draws on the emerging feminist literature in the humanities and in the social, natural, and applied sciences. Feminist critiques of prevailing approaches to knowledge are considered as well as feminist contributions to the development of theory and method. Emphasis on particular areas may vary from year to year.

Prerequisites: Third-year standing and Women's Studies 09.188 or 09.288 (no longer offered).

Lectures and discussion three hours a week.

Women's Studies 09.490★ A and B Sections

Independent Study

A reading or research course for selected students who wish to investigate a particular topic of interest under the supervision of an individual faculty member. Available to Third and Fourth-year students. A written outline of the course approved by the supervisor must be submitted to the Institute of Women's Studies one week before the last day for course changes. Normally, students may not offer more than one-half credit of independent study in their total Women's Studies program.

Prerequisites: Third- or Fourth-year standing and permission of the Institute of Women's Studies.

Women's Studies 09.491★

Selected Topics in Women's Studies I

Prerequisite: Permission of the Institute of Women's Studies.

Women's Studies 09.492★

Selected Topics in Women's Studies II

Prerequisite: Permission of the Institute of Women's Studies.

Women's Studies 09.498

Honours Research Essay

Students in the Combined Honours Program in Women's Studies and another discipline may write an honours research essay in Women's Studies. The subject for research is settled in conjunction with the Institute and an appropriate supervisor.

Prerequisites: Fourth-year standing in Women's Studies and Women's Studies 09.388.

Courses with Substantial Material on Gender or Women's Experience Offered Within the Arts and Social Sciences Faculties and the Faculty of Graduate Studies and Research

The following course offerings are listed here for the convenience of students. Detailed course descriptions are given under the appropriate faculty, or interdisciplinary listing.

Note: Special Topics courses and other courses offered by units throughout the university may in any given year contain substantial material on Gender and/or Women's Experience. Recent examples include offerings in the Departments of Art History, Geography, History, Journalism and Sociology.

Faculty of Arts*Art History*

- 11.514★ Canadian Women Artists: Between the World Wars

Canadian Studies

- 12.520 Women's Studies

Comparative Literary Studies

- 17.302 Gender and Literature

English Language and Literature

- 18.292 Women and Literature

History

- 24.254 Introduction to the History of Women
24.346★ The History of African-American Women from Slavery to the Civil Rights Movement
24.354 Women and North American Society
24.375★ Women in Latin American History
24.452 Gender and the Culture of Protestantism
24.454 Selected Problems in the History of Women and the Family: The Pre-Industrial Atlantic World
24.459 Selected Problems in the History of Women and the Family: from the Industrial Revolution
24.559 Women in Nineteenth- and Twentieth-Century North America and Britain

Linguistics and Applied Language Studies

- 29.273★ Gender and Language

Mass Communication

- 27.355★ Media and Gender

Music

- 30.332★ Music and Gender I
30.433★ Music and Gender II
30.505★ Feminism and Musicology

Philosophy

- 32.236★ Philosophy and Feminism
32.237★ Topics in Feminist Philosophy

Religion

- 34.203★ Women in the Christian Tradition
34.325★ Selected Topics of Women and Religion

Faculty of Social Sciences*Business*

- 42.462 Women in Business

Geography

- 45.544 Gender and Environments

Law

- 51.301★ Women and The Legal Process
51.384 Law of the Family
51.401★ Law, Family and Gender
51.402★ Feminist Theories of Law
51.502★ Law and Gender Relations
51.532★ Feminism: Law and Social Transformation

Political Science

- 47.350★ Women in Politics: Liberal Democracies I
47.351★ Women in Politics: Liberal Democracies II
47.352 Women in Politics: Third World
47.450★ Feminist Political Analysis in Comparative Perspective

Psychology

- 49.363★ Psychology of Women
49.580★ Psychology of Women

School of Social Work

- 52.506★ Women and Welfare
52.516★ Women and Social Policy
52.528★ Feminist Counselling

Sociology-Anthropology

- 53.247 Women in Society
53.482★ Feminist Theories of Sexuality and Human Reproduction
53.537★ Psychoanalysis and Cultural Studies
53.538★/54.538★ Feminist Analyses
53.548★/54.548★ Feminism and Materialism
53.550★ Gender Formation and State Formation
53.568★ Women and Work
54.248★ The Anthropology of Women
54.249★ Development, Dependency and Gender
54.519★ Development, Dependency and Gender
56.241 Kinship, Marriage and the Family
56.459★ Workshop in Feminist Theory and Analysis

Awards for Academic Excellence

Medals

The Governor-General's Medal-Bachelor Degree Program

Awarded annually to the graduating student with the highest academic standing in a Bachelor degree program. Donor: His Excellency the Governor General of Canada. Established 1952.

The Chancellor's Medal

Awarded annually in the name of the Chancellor of the University to a graduating student of outstanding academic achievement. Established 1962.

The President's Medal

Awarded annually in the name of the President of the University to the student with the highest standing in a pass program of studies. Established 1968; revised 1980.

University Medals

Awarded annually, when merited, to the graduating students standing highest in Arts, Social Sciences, Science, Engineering, Architecture, Commerce, Computer Science, Journalism, Industrial Design, interfaculty studies, Music, Public Administration and Social Work. Established 1949.

Senate Medals

Awarded, when merited, to graduating students of outstanding academic achievement. Established 1952.

Lieutenant-Governor's Medal in Architecture

Awarded annually, when merited, to the student standing at the head of the graduating class in Architecture. Established 1979.

Undergraduate Entrance and In-Course Scholarships

Carleton University awards scholarships tenable at the University, in the Fall/Winter session of the year of offer, to entrance and in-course full-time undergraduate students who have demonstrated a high potential for university studies. The intention of the scholarship policy is to recognize, attract and provide incentives for excellence. The total value of the scholarship or scholarships awarded is determined by the student's most recent academic standing.

The following entrance scholarships will be offered in 1996-97:

Eight Chancellor's scholarships with a total possible value of \$20,000 over four years, (\$5,000 a year). The scholarship may be continued each year of full-time enrolment, provided the student maintains a GPA of 10.0 or better. *These scholarships require an application, which must be completed and returned to the Awards Office by May 14.* Priority will be given to academic performance, but the committee will also consider the applicant's other interests and activities during secondary school.

Students may be offered the following scholarships provided that a complete application for admission

has been received by the University's Office of Admissions and Academic Records directly or through the Ontario Universities' Application Centre by June 15:

Scholarships with a total possible value of \$12,800 over four years (\$3,200 a year). The scholarship may be continued each year of full-time enrolment, provided the student maintains a GPA of 10.0 or better.

Scholarships with a total possible value of \$6,000 over four years (\$1,500 a year). The scholarship may be continued each year of full-time enrolment, provided the student maintains a GPA of 10.0 or better.

Scholarships with a total possible value of \$4,000 over four years (\$1,000 a year). The scholarship may be continued each year of full-time enrolment, provided the student maintains a GPA of 10.0 or better.

Students who receive scholarships of \$1,000 or \$1,500 a year and who are enrolled in the following programs are eligible for scholarship enrichments of \$2,000 over four years (\$500 a year): B.A., B.Hum., B.Mus., B.Com., B.P.A., B.Sc., B.Eng.

Fifteen awards valued at \$500 for the entrance year only, to be given to the top students entering Carleton from secondary schools in the Regional Municipality of Ottawa-Carleton. This award will be in addition to any other the student may receive from Carleton.

All in-course students and all graduating students who meet the academic requirements for the awarding of University in-course scholarships will be named to the Deans' Honour List for every year in which they qualify.

University in-course scholarships (based on full- or part-time study) will be awarded on the following conditions:

1. The student must be enrolled in a degree program at the time of selection;
2. The student will not be offered a scholarship beyond the Fourth year of study (Fifth in Architecture);
3. A GPA of 10.0 or better is required;
4. The grade points of all credits taken in the period considered for the scholarship will be used to calculate the GPA;
5. No *F*, *FNS* or *Abs* will be acceptable during the period considered for the scholarship;
6. No grades achieved through a grade-raising examination will be considered;
7. Each summer, the Selection Subcommittee will determine the value of the scholarships to be awarded for each GPA; and
8. Students in the Co-operative Education stream and the Industrial Experience program will not draw upon scholarship funds for a work period. On returning to full-time studies they will come under scholarship provisions.

Full-time Students:

1. The definition of a full-time student is a student who registers in a minimum of 4.0 credits during the Fall/Winter Session.
2. Scholarships will be based on all credits taken in the 12-month period May to April.

3. In order to hold the scholarship, the student must be returning to Carleton as a full-time undergraduate student.

Part-time Students:

1. The definition of a part-time student is a student who registers in fewer than 4.0 credits during the Fall/Winter Session.

2. Candidates will be considered for scholarships based on the average of all credits (minimum of four) taken in the past 24 month period (May -April). However, if the candidate was awarded a scholarship the previous spring, a minimum of four new credits must be considered for the new scholarship; the same credit may not be used twice for scholarship consideration.

3. The student must be continuing at Carleton in his or her undergraduate degree program.

Note:

Since the income from funds may vary from year to year, the values shown for scholarships, awards and bursaries may change.

Scholarships and Awards by Faculty

Scholarships and awards of varying amounts, which are of interest to students in specific programs, are listed below:

Faculty of Arts

Arts

A. Andras Memorial Grant

Award of the Embassy of Austria (German)

Jack Barwick and Douglas Duncan Memorial Scholarship in Art History

Jack Barwick and Douglas Duncan Memorial Scholarship in Music

Claude Brunelle Memorial Scholarship (Central/East European and Russian-Area Studies)

Landen Dominic Burnett Memorial Award (Art History)

The Colonel John By Award for History

Carleton Beaverbrook Awards for Freedom of the Press (History)

CHEZ-FM Research Award(s) in Mass Communication

Coulson Memorial Scholarship (Classics)

Bertha F. Davis Award in Religion

Department of French Awards

Awards of the Embassy of France (French)

Awards of the Embassy of the Federal Republic of Germany (German)

Fitzroy Township Historical Society Scholarship

Richard Glover Scholarship (History)

Louis and Miriam Goldstein Book Award in Judaic Studies (Religion)

Peter Gerard Harris Memorial Award (Mass Communication)

Rosemarie Hoey Award in English

Sara Helen Parry Hughes Travel Award (Spanish)

Award of the High Commission of India (Religion)

Allama Mohammad Iqbal Award (Religion)

Award of the Embassy of Italy (Italian)

George Johnston Poetry Award (English)

Eldon Kaye Memorial Scholarship (French)

Marston LaFrance Memorial Award in English

David Carton MacDonald Memorial Award (English)

Macdonald Club Awards in Music

R.L. McDougall Award in English

Macedonian Association of Ottawa Scholarship in Greek Studies

Music Award

Jayashree A. Nagpur Memorial Award (English)

Bettina Oppenheimer Memorial Scholarship in Music

Ordine Italo-Canadese Scholarship (Italian)

Robert E. Osborne Award (Religion)

Ottawa Film Society Scholarship for Film Studies

Ottawa Women's Canadian Club Scholarship (Canadian Studies)

Rogers Communications Award in Mass Communication

Department of Russian Undergraduate Award

Samuel Sair Canadian Jewish History Prize

Award of the Embassy of Spain (Spanish)

Bette Spooner Award in Classics

Randell Stanton Memorial Book Prize (English)

Barbara Sudall Book Prize (English)

Award of the Ambassador of Switzerland to Canada (French, German, Italian)

Michael Thompson Scholarship in English

Underhill Prize (History)

Wilgar Memorial Award in English

Gordon J. Wood Scholarships in English

Susan Joan Wood Memorial Scholarship (English)

Hume Wrong Scholarship (History)

YTV Canada Inc. Youth & Television Award (Mass Communication).

Journalism

John E. Bird Memorial Scholarship

Elissa Gail Bonder Scholarship in Journalism

The Canadian Corporate News Scholarship in Journalism

Wilfrid Eggleston Award in Journalism

Bob Farquharson Memorial Award in Journalism

The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Scholarship

Blair Fraser Memorial Award for Journalism Graduates

Marisa Ann Golini Memorial Scholarship in Journalism

Margaret Graham Award

Mitch Jacobson Memorial Award in Photojournalism

Judith Johansen Memorial Award

Journalism Writing Style Book Award

Charles Lazarus Scholarship

Jeannette Matthey Memorial Scholarship

National Capital Harvard Business School Alumni Club Book Prize

Marjorie Nichols Memorial Award

Ottawa Citizen Scholarship in Journalism

Peter Reilly Scholarship

Rogers Communications Award in Television Journalism

Herman and Zelda Roodman Award in Journalism

E. Norman Smith Memorial Award

Kenneth F. Smith Memorial Award in Journalism

Richard R. Snell Memorial Award in Journalism

Thomson Award for Reporting

Vistas Scholarship

Kenneth R. Wilson Memorial Award for Journalism Graduates
Phyllis Wilson Award in Journalism.

Division of Engineering

Architecture

Michael Russell Coote Memorial Award
Jack Deutsch Memorial Masonry Award
The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Entrance Scholarship
The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Scholarship
Ontario Association of Architects Awards
Randell Stanton Memorial Book Prize
Page and Steele School of Architecture Scholarship
Jacques and Hélène Sabourin Memorial Scholarship

Engineering

Adjeleian Allen Rubeli Prize
AFCEA Scholarship
Rajesh Ahluwalia Memorial Scholarship
American Society for Metals Award in Engineering Building Envelope Council, Ottawa Region, Award
Joseph and Yvonne Bulger Scholarship in Engineering
Dr. John H. Chapman Memorial Prize in Communications Engineering.
Consulting Engineers of Ontario Scholarship
CSME Gold Medal
W.R. Davis Engineering Scholarship
Engineering Institute of Canada Award
Golder Associates Award
Krishnakumar Gopalan Memorial Scholarship
Andrew S. Haydon Scholarship
Kipling Award
Roderick C. McDonald Memorial Scholarship in Engineering
McNaughton Scholarship
Luigi Mion Scholarship in Engineering
National Capital Harvard Business School Alumni Club Book Prize
Ontario Hydro Engineering Award
Ontario Professional Engineers Foundation for Education Scholarship
Dr. C. Stewart Parsons Scholarship in Engineering
The Robert Pickard Scholarship in Environmental Engineering
James H. Ratray Memorial Scholarship
Rolls-Royce Scholarship
Eric Sigurdson Award
The William John Stauffer Memorial Bursary in Electrical Engineering
Vered Foundation Scholarships

Industrial Design

Michael Elmarson Award
George A. Lynn Memorial Scholarship
Barrington Nevitt Memorial Award
Purvins Memorial Award

Faculty of Science

Science

Motoshi Asano Memorial Scholarship in Chemistry
Paul R. Beesack Memorial Scholarship in Mathematics
Berke Scholarship in Chemistry
Dr. M. Ralph Berke Award in Chemistry
Director's Award in Biochemistry
Charles Anthony Blundell Betts Memorial Scholarship in Physics
J.P. Bickell Foundation Scholarships (Geology)
The Canadian Society for Chemistry Medal
Canadian Society of Petroleum Geologists Undergraduate Student Award
Society of Chemical Industry Award
W.H. Collins Memorial Scholarship
Catherine Daumery Memorial Award for Botanical Collection
Dr. Reginald T. Elworthy Award in Chemistry
E. Alison Flood Award in Physical Chemistry
GAC-MAC Undergraduate Scholarship in Earth Sciences
Ian H. Griffith Memorial Scholarships
Simon Guest Memorial Book Prize (Geology)
Trevor A. Harwood Memorial Award
E.P. (Ted) Hincks Memorial Scholarship in Physics
E.P. Hincks Award of the Institute of Particle Physics
J.M. Holmes Entrance Scholarship in Chemistry
Professor James M. Holmes Scholarship in Chemistry
Janet M. Holmes Memorial Scholarship (Chemistry)
Dr. Harry Katznelson Memorial Scholarship (Biology)
Department of Mathematics and Statistics Entrance Award
Betty Nesbitt Memorial Award in Biology
H.H.J. Nesbitt Scholarship in Biology
F.K. North Award in Geology
Dr. Iain Ogle Memorial Scholarship (Geology)
Ottawa Section of the Petroleum Society of CIM Annual Award
R.L. Rosenberg Memorial Scholarship in Mathematics
Richard J. Semple Memorial Award in Mathematics
L.N. Wadlin Scholarship in Mathematics
Elizabeth White Memorial Award for Zoological Collection
Donald R. Wiles Scholarship in Chemistry
Morley E. Wilson Scholarship (Geology)

Computer Science

CIPS Ottawa Section Scholarship
Jamie Corbet Memorial Award
Fulcrum Technologies Inc. Scholarship
Andrew S. Haydon Scholarship
National Capital Harvard Business School Alumni Club Book Prize
Derek Rymerson Scholarship
David A. Thomas Scholarship in Computer Science
Goldie Wilkinson Scholarship

Faculty of Social Sciences

Mrs. George S. Abbott Memorial Award in Law
The Honourable Walter Baker Memorial Scholarship in Political Science
Bank of Nova Scotia, Carleton University Branch
Award in Commercial Law

Karl Bernhardt Scholarship in Psychology
 Professor T.N. Brewis Scholarship in Applied Economics
 CCH Canadian Limited Award in Taxation
 Carswell Company Book Award in Public Law
 Victor S. Castledine Scholarship (Economics or Business)
 CHEZ-FM Research Award in Sociology and Anthropology
 Communications Law Prize
 Scholarship in Comparative Economics
 Economics Scholarship
 Elizabeth's Award in Family Law
 Randall Geehan Memorial Scholarship in Quantitative Economics
 Mr. and Mrs. Louis L. Goldstein Book Award in Law
 R.A. MacKay Award in Political Science
 Betty Nesbitt Memorial Award in Biology
 The Osgoode Society Legal History Book Prize
 Oxford University Press Award in Law
 Prince Memorial Achievement Award (Economics)
 R.L. Rosenberg Memorial Scholarship in Mathematics
 Celia Ruygrok Memorial Scholarship (Criminology and Criminal Justice)
 Richard J. Semple Memorial Award in Mathematics
 Vered Foundation Scholarship (Political Science)
 Jessie and Wreford Watson Award in Geography
 R.A. Wendt Book Prize (Psychology)
 Hume Wrong Scholarship (Political Science)

Business

Victor S. Castledine Scholarship
 Certified General Accountants Association of Ontario
 Award for Excellence
 Deloitte & Touche Scholarships
 Ernst & Young Award
 Lil Fallis Scholarship
 W.P. MacDonald Memorial Scholarship in Accounting
 D.F. McKechnie Award in Accounting
 National Capital Harvard Business School Alumni Club Book Prize
 James Nolan Memorial Award
 Stewart G. Paul Memorial Award
 Peat Marwick Thome Scholarships
 Charles Pinhey Award
 Lawrence Segal Memorial Fund
 Women's Business Network Association of Ottawa Scholarship

Undergraduate In-Course Scholarships for Part-Time Students

Undergraduate University Scholarships
 University Women's Club of Ottawa Scholarships

Undergraduate Scholarships and Awards

Mrs. George S. Abbott Memorial Award In Law
 Value \$100. To be awarded annually for proficiency in Law courses taken at Carleton University to a student planning to enter law school. Donor: Sons of Mrs. Abbott. Established 1968 in memory of Mrs. George S. Abbott. Revised 1989.

Addison-Wesley Award in Law

A prize of ten Addison-Wesley titles awarded annually, on the recommendation of the Department of Law, to a deserving student in a combined program of study, one of the disciplines of which is law. Donor: Addison-Wesley Publishers Limited. Established 1984.

Adjeleian Allen Rubeli Prize

Awarded annually, on the recommendation of the Chair of the Department of Civil Engineering, to the students submitting the best and second best Fourth-year engineering project. Donor: Adjeleian Allen Rubeli & Associates. Endowed 1989.

AFCEA Scholarship

Value \$1000. Awarded annually, on the recommendation of the Dean of Engineering or the Director of the School of Computer Science. This scholarship is given alternately to a student in the Electrical or Computer Systems program and the Computer Science program. The recipient must be an outstanding student who is a Canadian citizen proceeding from Third to Fourth year of the program. Donor: Armed Forces Communications and Electronics Association (AFCEA) Ottawa Chapter. Established 1990. Revised 1993.

Rajesh Ahluwalia Memorial Scholarship

Awarded annually, on the recommendation of the Dean of Engineering, to a deserving student proceeding from Third to Fourth year of an engineering program. Donors: Family and friends of Rajesh Ahluwalia, M. Engineering, Carleton 1975. Established 1993.

American Society for Metals Award in Engineering

Value \$100. Awarded annually to an outstanding student with an interest in materials engineering. Donor: Ottawa Valley Chapter, American Society for Metals. Established 1951. Revised 1984.

A. Andras Memorial Grant

To support the cost of a research project or paper undertaken by an undergraduate or graduate student attending Carleton University. This grant is awarded in alternate years for a research project in one of the following areas: (a) Jewish studies; (b) trade union history or the democratic socialist movement in Canada. Endowed 1972 in memory of the late Mr. A. Andras, a member of Carleton's Board of Governors. Revised 1978.

Motoshi Asano Memorial Scholarship in Chemistry

Awarded annually on the recommendation of the Department of Chemistry to a student in a Chemistry program. Preference shall be given to a full-time student in physical spectroscopy. Donated by the Asano family of Kobe, Japan, in memory of their son, Motoshi Asano, who received his Ph.D. in physical chemistry at Carleton in 1983, and who tragically lost his life in a mountain climbing accident two months later. Endowed 1984.

Medal of the Association of Professional Engineers (Ontario)

Awarded annually, when merited, to the graduating student standing highest in Engineering. Established 1961.

Award of the Embassy of Austria

For excellence in the study of German, a book award is offered annually by the Austrian Embassy in Canada. Established 1960.

The Honourable Walter Baker Memorial Scholarship in Political Science

Awarded annually on the recommendation of the Department of Political Science to one or more students finishing the Third year of an Honours program. The selection will be made on the basis of high academic standing, with consideration given to demonstrated political leadership or involvement in politics. This scholarship is given in memory of the Honourable Walter Baker, P.C., Q.C., M.P., B.A., a distinguished graduate of Carleton University. Endowed in 1984 by friends of the Honourable Walter Baker.

Frederick William Baldwin Scholarship

Awarded annually to outstanding students entering or proceeding from one year of program to another at Carleton University. Donor: Estate of Frederick William Baldwin. Endowed 1983.

Bank of Nova Scotia, Carleton University Branch, Award in Commercial Law

Value \$100. Awarded annually to a student with high standing in courses in the Commercial Law field. Donor: the Bank of Nova Scotia, Carleton University Branch. Established 1980.

F. Luella Barrigar Scholarships

Awarded annually to students entering Carleton University or proceeding from one year of program to another. Some preference shall be given to students with an interest in music. These scholarships are provided through the bequest of the late Miss F. Luella Barrigar, a teacher of music at the Ottawa Teachers' College. Donor: The late F. Luella Barrigar. Endowed 1981.

Jack Barwick and Douglas Duncan Memorial Scholarship for Art History

Awarded annually to a student or students in the Art History program. The Director of the School for Studies in Art and Culture and faculty members of the Art History program are to decide each year on the most appropriate disbursement of the award. Donor: Mrs. J.P. Barwick. Endowed 1972. Revised 1992.

Jack Barwick and Douglas Duncan Memorial Scholarship for Music

Awarded annually to a student or students in the Music program. The Director of the School for Studies in Art and Culture and faculty members of the Music program are to decide each year on the most appropriate disbursement of the award. Donor: Mrs. J.P. Barwick. Endowed 1972. Revised 1992.

Paul R. Beesack Memorial Scholarship in Mathematics

A scholarship and book prize awarded annually to the student, continuing to the Second year of an Honours Program in the Department of Mathematics and Statistics, with the highest combined standing in the required (full-credit) mathematics courses of First year. Endowed in 1986 by the family, friends and academic colleagues of the late Paul R. Beesack, an

outstanding analyst, who served this University, his department and his discipline with excellence.

Berke Scholarship in Chemistry

Awarded annually to an outstanding student proceeding to the Second year of an Honours Chemistry program. Donor: Dr. and Mrs. M. Ralph Berke. Endowed 1981.

Dr. M. Ralph Berke Award in Chemistry

The yield of a \$500 fund is awarded each year, if merited, on the recommendation of the Department of Chemistry for a prize to be awarded to an outstanding student majoring in chemistry proceeding from the Second to the Third year of the degree program. Donor: Dr. M. Ralph Berke. Endowed 1956.

Karl Bernhardt Scholarship in Psychology

Awarded annually, on the recommendation of the Chair of the Department of Psychology, to a student entering the Fourth year of the Honours Psychology program who has demonstrated excellence in the area of Personality and/or Developmental Psychology. Endowed in 1992, by family, in memory of Professor Karl S. Bernhardt, a Canadian pioneer in child psychology and former Director of the Institute of Child Study at the University of Toronto.

Charles Anthony Blundell Betts Memorial Scholarship in Physics

Awarded annually, if merited, to a student of high proficiency in Physics, entering or continuing in Physics Honours or in the Major program, in the Second or subsequent years of the degree program. Donors: Mr. and Mrs. Oliver Betts, Birmingham, England, in memory of their son, Charles Anthony Blundell Betts. Endowed 1964.

Dr. Thomas Betz Memorial Award

Value \$1000. Awarded annually, when merited, on the basis of scholarly promise and potential for intellectual leadership. This award is open to undergraduate and graduate students. The recipient will be chosen on the recommendation of a Selection Committee chaired by the Dean of the Faculty of Graduate Studies and Research, from a list of candidates nominated by departments, schools and institutions. Established in 1990 by family, friends and colleagues in memory of Dr. Thomas Betz.

J.P. Bickell Foundation Scholarships

The Trustees of the J.P. Bickell Foundation have established in the Department of Earth Sciences, Faculty of Science, scholarships for students entering the geological profession, of a possible value of \$3,000 each. The scholarships may be awarded on entrance into the Honours Geological sequence at the First-, Second- or Third-year levels at Carleton University. The scholarships are payable over two or three years depending on the entrance level. Donor: J.P. Bickell Foundation, Trustees, National Trust.

John E. Bird Scholarships

Two scholarships are awarded annually to outstanding students who are proceeding from one year of program to another in a Degree program in Journalism. Donor: Estate of Mrs. V. Bird. Endowed 1981.

Director's Award in Biochemistry

Value \$100. Awarded annually to the Fourth-year Biochemistry student performing the most distinguished Honours Research project. Donor: Anonymous. Endowed 1981.

Elissa Gail Bonder Scholarship in Journalism

Awarded in alternate years, on the recommendation of the Director of the School of Journalism and Communication, to an outstanding student entering the First year of the Journalism program from a high school in the Regional Municipality of Ottawa-Carleton. Established in 1995 by Linda and Ted in memory of his daughter Elissa Gail Bonder who graduated posthumously from Lisgar Collegiate Institute in 1991.

Professor T.N. Brewis Scholarship in Applied Economics

Value \$1,000. Awarded annually on the recommendation of the Department of Economics to an undergraduate or graduate student in the department. Preference shall be given to a student who has shown aptitude in the field of applied economics. Professor Brewis was a distinguished member of the Department of Economics at Carleton University for 25 years and is well known for his contributions in the fields of macroeconomic and regional economic policy. Donor: Professor T.N. Brewis. Endowed 1981.

Claude Brunelle Memorial Scholarship

Awarded annually on the recommendation of the Institute of Central/East European and Russian-Area Studies to the student with the highest standing among those proceeding from the Third to the Fourth year of the undergraduate program. Donors: Family, friends and colleagues of the late Claude Brunelle, a former student of the Institute. Endowed 1985.

Donald William Buchanan Scholarship

Awarded annually for general competition among students entering Carleton University. Donor: The late Donald William Buchanan. Endowed 1967.

Building Envelope Council, Ottawa Region, Award

Value \$200. Awarded annually, on the recommendation of the Chair of the Department of Civil and Environmental Engineering, to a graduating student in an undergraduate or graduate program of study who has demonstrated excellence in the area of building envelopes. Donor: The Building Envelope Council, Ottawa Region (BECOR). Established 1995.

Joseph and Yvonne Bulger Scholarship in Engineering

Two scholarships are awarded annually, on the recommendation of the Dean of Engineering, to students of high proficiency and who are Canadian Citizens proceeding from one year to another of the Civil Engineering program. Preference will be given to students who attended a high school in the National Capital Region. Endowed in 1991 by friends of Joseph V. Bulger in honour of his dedication and service to the engineering and construction industry.

Landen Dominic Bumett Memorial Award

Value \$300. Awarded annually to an outstanding student in the Art History program. The recipient will be chosen by the Director of the School for Studies in Art and Culture on the recommendation of faculty

members of the Art History program. Donor: The Vered Foundation. Established 1979. Revised 1992.

Dr. John Davis Burton Award

Awarded annually, when merited, to a student in good standing enrolled in a program at Carleton University, University of Ottawa, La Cité Collégiale or Algonquin College who has made a significant contribution toward awareness, equality and integration of persons with disabilities within his/her educational community. The recipient will be chosen on the recommendation of the Assistant Director (Special Needs), Counselling and Student Life Services at Carleton University, assisted by a Selection Committee. Endowed in 1992 by students, family and friends of Dr. John Davis Burton, who was a champion and advocate for persons with disabilities throughout his career as an educator.

The Colonel John By Award for History

A prize awarded in alternate years to a student in a Third-year history course who writes the best paper on a topic relating to Canadian history. Preference will be given to papers concerning the National Capital Region. Donor: The Historical Society of Ottawa. Established 1990.

D. Roy Campbell Scholarship

Awarded annually, under the terms of the will of the late D. Roy Campbell, for competition among students entering Carleton University with high standing in the senior matriculation examinations or the equivalent. Donor: The late D. Roy Campbell. Endowed 1962.

Henry Campbell Scholarships

Two scholarships awarded annually to full-time students entering or progressing from one year to the next at Carleton University. Provided from the estate of the late Edna Alice Campbell. Endowed 1978.

The Canadian Corporate News Scholarship in Journalism

Value \$1000. Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, to an outstanding student who is proceeding from one year to another in the Bachelor of Journalism program. Donor: Canadian Corporate News. Established in 1995 to commemorate the 50th anniversary of Carleton's first courses in journalism.

Canadian Federation of University Women/Ottawa Scholarships

Three scholarships valued at \$500 each. Awarded annually to women students at Carleton University continuing in undergraduate studies who have completed the equivalent of at least five credits beyond entrance requirements at the University and have demonstrated a high potential for university studies. To be eligible, the candidate must have maintained a high academic standing and be registered as a part-time student. Donor: Canadian Federation of University Women/Ottawa. First established in 1952 in honour of Dr. Alice E. Wilson, Revised 1989, 1993.

The Canadian Society for Chemistry Medal

Awarded annually to the student obtaining the highest academic standing in the penultimate year in the Honours Chemistry program. Established 1950. Revised 1983, 1985, 1990.

Canadian Society of Petroleum Geologists Undergraduate Student Award

An award, consisting of a certificate and one-year student membership in the Canadian Society of Petroleum Geologists, is given by the society on the recommendation of the Department of Earth Sciences, to an undergraduate student who has excelled in fields relating to petroleum geology. Established 1978.

Carleton Beaverbrook Awards for Freedom of the Press

Value \$300. Two awards are given annually, one on the recommendation of the Chair of the Department of History to a student enrolled in a history course, and the other on the recommendation of the Director of the School of Journalism and Communication to a student enrolled in a journalism course, who respectively submit the best essays that address the topic of freedom of the press and/or the right of access to the use of this medium by individuals and organizations. A case history method study will be favoured over a generalized essay. The awards will be provided from interest generated by The John Hanson Fund. Donor: J. Carlisle Hanson, Q.C. Endowed in 1982 in honour of John Hanson, a Canadian pioneer who, during his lifetime (1793-1820), established a settlement at Chamcook Island, New Brunswick. Revised 1992.

Carleton University Academic Staff Association Scholarship

Value \$1,500. Awarded annually to a student of high proficiency proceeding from one year of program to another in undergraduate studies at Carleton University. Donor: Carleton University Academic Staff Association. Established 1977.

Carleton University Awards in English

Value \$1,000. Awarded annually to students from Ottawa area high schools. Prizes will be given in two categories. The writing award will be given for any one of the following: a play of at least 30 minutes running time; a sheaf of poems; a minimum of at least three short stories (no maximum); or a novel. The essay award will be given for an essay of a length to be determined annually by the Department. Candidates may contact the Carleton University Department of English for terms of the prizes, though information will be sent yearly to the English departments of all high schools in the area. In each category, the judges will award a first prize of \$200, a second prize of \$100 and four third prizes of \$50, unless they deem entries to be of insufficient calibre. Donor: Anonymous. Established 1981. Revised 1985.

Carleton University Caribbean Club Award

Value \$200. Awarded annually, if merited, on the recommendation of the Director of Student Awards, to an outstanding student who is a member of the Carleton Caribbean Club. Donor: The Carleton University Caribbean Club. Established 1991.

Carleton University In-Course Scholarships

These scholarships are named in honour of former Chancellors, Presidents and Chairs of the Board of Governors of Carleton University and are awarded to

outstanding students proceeding from one year to another of a full-time undergraduate program at Carleton.

Carswell Company Book Award in Public Law

A book prize and certificate are awarded annually to the top full-time student in the Second, Third and Fourth year of any of the undergraduate Law programs. Donor: The Carswell Company Limited. Established 1965. Revised 1987, 1992.

Victor S. Castledine Scholarship

Awarded annually to a student in Economics or Business who, in the opinion of the Chair of the Department of Economics in counsel, has done outstanding work in the area of money, credit and banking studies. Donor: Victor S. Castledine, Esq. Endowed 1971.

CCH Canadian Limited Award in Taxation

A one-year's subscription to CCH's seven-volume Canadian Tax Reports awarded annually, on the recommendation of the Department of Law, to the student achieving the highest grades in tax law courses. Donor: CCH Canadian Limited. Established 1984.

Certified General Accountants Association of Ontario Award for Excellence

Value \$1,000. An annual award for excellence is given on the recommendation of the Director of the School of Business to a student graduating from Carleton University who has displayed outstanding achievement in accounting. The award is composed of a cash award of \$150 plus a credit of \$850 to be drawn down as and when the successful candidate wishes, for the purpose of defraying any fees related to courses in the CGA study program. The first draw-down on the credit must be made not later than 18 months after the date of notification to the successful candidate. Thereafter, the credit will be valid as long as the person is enrolled in the CGA program in Ontario. Donor: The Certified General Accountants Association of Ontario. Established 1981. Revised 1988.

Dr. John H. Chapman Memorial Prize in Communications Engineering

Value \$1,500. Awarded annually, on the recommendation of the Faculty of Engineering, to a student proceeding from Third to Fourth year who has demonstrated an interest in telecommunications and displays great promise in this field. This scholarship is provided by Spar Aerospace Limited in honour of Dr. John H. Chapman, who is widely regarded as the father of the Canadian space program. Established 1981. Revised 1985.

Society of Chemical Industry Award

A gold key with the crest of the Society of Chemical Industry in front and the name of the winner, course, year and university on back is granted to the student who has the highest standing in the final year of the Honours program in Chemistry. The winner will also receive a year's subscription to the journal, Chemistry and Industry. Donor: Canadian Section, Society of Chemical Industry. Established 1961.

CHEZ-FM Research Award(s) in Mass Communication

Value \$1000. Awarded annually to support the cost of Honours Research Project(s) in the Mass Communication program. The award(s) are given to project(s) on radio broadcasting and issues related to broadcast regulation generally. The recipient(s) are determined annually on the recommendation of a panel selected by the Associate Director (Mass Communication) of the School of Journalism and Communication in conjunction with the donor. Donor: CHEZ-FM Inc. Established 1984.

CHEZ-FM Research Award in Sociology and Anthropology

Value \$600. Awarded annually, when merited, to a Fourth-year Honours student or a graduate student enrolled in a Sociology program. The award is intended to assist with the cost of a media-related research project, essay or thesis involving quantitative research on radio broadcasting, broadcast regulation generally, or contributing to general theoretical development in media sociology. The recipient is chosen annually on the recommendation of a panel, selected by the Chair of the Department of Sociology and Anthropology, which includes a representative from CHEZ-FM Inc. Donor: CHEZ-FM Inc. Established 1989. Revised 1993.

CIPS Ottawa Section Scholarship

Value \$625. Awarded annually, on the recommendation of the Director of the School of Computer Science, to a full-time undergraduate student proceeding from one year to another of the Computer Science program. The award is composed of a cash award of \$500 plus a one-year CIPS student membership and admission to regular Ottawa Section meetings. Donor: Ottawa Section of the Canadian Information Processing Society (CIPS). Established 1992.

W.H. Collins Memorial Scholarship

Value \$8,000 over four years, (\$2,000 per year). Awarded annually to a student entering the First year of the Geology program. This award was endowed in 1994 to commemorate W.H. Collins for his outstanding achievement in the earth sciences including the directorship of the Geological Survey of Canada from 1920-1936.

Communications Law Prize

Awarded annually on the recommendation of a panel comprised of selected members of faculty who specialize in communications law, for excellence in the study of broadcast, press and telecommunications law. Donor: Leonard M. Bellam. Endowed 1983.

Scholarship in Comparative Economics

Awarded annually, if merited, on the recommendation of the Department of Economics, to an undergraduate or graduate student who has shown aptitude in the field of comparative economics. Established by Professor Richard Carson in memory of his parents, Robert L. and LeVerne N. Carson. Endowed 1991.

Duchess of Connaught Scholarship

The yield from the endowment of this historic scholarship has been made available to Carleton University

by the Laurentian Chapter, I.O.D.E. The scholarship is to be awarded to an able student entering Carleton University, and may be held until graduation if merited, at which time a new award will be made. Donor: Laurentian Chapter I.O.D.E. Endowed at Carleton University 1960.

Consulting Engineers of Ontario Scholarship

Value \$500. Awarded annually, on the recommendation of the Dean of Engineering, to an outstanding student proceeding from Third to Fourth year of an Engineering program. Donor: Consulting Engineers of Ontario (CEO). Established 1991.

Naomi Cook Scholarship Fund

Awarded annually to students with high academic standing entering Carleton University. Donor: The late Naomi Cook. Endowed 1967.

Michael Russell Coote Memorial Award

Awarded annually, on the recommendation of the Director of the School of Architecture, to a promising student who has successfully completed First year in the School of Architecture. Donors: Friends, family and colleagues of the late Michael R. Coote. Endowed 1983 in memory of Michael R. Coote, a member of the faculty since 1970 and Director of the School of Architecture from 1978 to 1982.

Jamie Corbet Memorial Award

Awarded annually, on the recommendation of the School of Computer Science, to an outstanding student who is proceeding from one year to another in the School of Computer Science. Donor: Friends and family of the late Jamie Corbet. Endowed 1981.

Coulson Memorial Scholarship

Awarded annually, on the recommendation of the Chair of the Department of Classics, to an undergraduate student proceeding from one year to another of a Classics program. This award was endowed in 1990 in memory of Maria Pia Coulson and Tom Hunter Coulson. Donor: The estate of Louisa Gallo.

Jennie Shibley Cramm Scholarship

Awarded annually to a female student of high proficiency entering Carleton University from Nepean High School, Ottawa. Donor: The late Jennie Shibley Cramm. Endowed 1967.

W.H. Cramm Scholarship

Awarded annually to a male student of high proficiency entering Carleton University from Nepean High School, Ottawa. Donor: The late Jennie Shibley Cramm. Endowed 1967.

CSME Gold Medal

Awarded annually, on the recommendation of the Dean of Engineering, to a graduating student in the Mechanical Engineering program for outstanding achievement. Donor: The Canadian Society for Mechanical Engineering. Established 1988.

Catherine Daumery Memorial Award for Botanical Collection

Value \$50, together with a book prize. Awarded annually, if merited on the recommendation of the Department of Biology, to a student who has submitted by November 1, an outstanding collection of

mounted and identified flowering plants. Donor: Anonymous. Established 1953.

Bertha F. Davis Award in Religion

Awarded annually to an outstanding student enrolled in the Pass or Honours program in the Department of Religion at Carleton University. Donor: Bertha Florence Davis. Endowed 1977.

W.R. Davis Engineering Scholarship

Value \$1,000. Awarded annually, on the recommendation of the Faculty of Engineering, to an outstanding student entering the Fourth year of the Electrical or Mechanical Engineering program. Donor: W.R. Davis Engineering Ltd. Established 1988.

Deloitte & Touche Scholarships

Two scholarships valued at \$500 each. Awarded annually to the two students in the School of Business who have attained the highest overall average in the First and Second year of the Business program and are proceeding in the accounting stream. Donor: Deloitte & Touche. Established 1962. Revised 1990.

Jack Deutsch Memorial Masonry Award

Value \$500. Awarded every three years to the Carleton Architecture student who, in the past three years, has had the highest GPA in technical subjects (including the grade given for the application of technology in the Second-year studio design program). This award is given in rotation to the three schools in Ontario offering the Bachelor of Architecture degree. Donor: Ontario Masonry Contractors Association. Established 1983.

Dobbie Regional Entrance Scholarships

Scholarships will be available for students entering Carleton University, to be divided equally among students from Ontario (except for the City of Ottawa), the Western provinces and the Territories, and Quebec and the Atlantic provinces. Donor: The late Jemema Grace Dobbie. Endowed 1967.

Lord Dundonald Chapter, I.O.D.E. Scholarship

Value \$200. Awarded annually to a student of superior standing and general proficiency, entering the final year of a degree program at Carleton University. Donor: Lord Dundonald Chapter, I.O.D.E. Established 1956.

Economics Scholarship

Value \$750. Awarded to the student or students entering the final year of the Honours program of studies, whose record of scholarship, in the opinion of the Department of Economics Scholarship Committee, merits special recognition. Established 1978.

Samuel L. Edelson Scholarship

Value \$250. Awarded annually to an outstanding student who is proceeding from one year of program to another at Carleton University. Donor: Members of the family. Established 1974.

Wilfrid Eggleston Award in Journalism

Value \$500. Awarded to the undergraduate with the best record in the Second-year Journalism Degree program. This award is named in honour of the late Dr. Wilfrid Eggleston, former Director of the School of Journalism. Donor: Anonymous. Established 1967.

Elizabeth's Award in Family Law

Value \$300. Awarded annually, on the recommendation of the Chair of the Department of Law, to the full-time undergraduate student standing highest in a course devoted to law of the family. Donor: V.M. Trudeau. Established 1989.

Michael Elmarson Memorial Award

Awarded annually, when merited, on the recommendation of the Director of the School of Industrial Design, to a student in the Industrial Design program who has demonstrated an outstanding environmental awareness in an undergraduate Industrial Design project. Established by students and staff in memory of Michael Elmarson, a Carleton Industrial Design student. Endowed 1991.

Dr. Reginald T. Elworthy Award in Chemistry

Awarded annually, on the recommendation of the Chair of the Department of Chemistry, to an outstanding student in Second year Physical Chemistry who is continuing in the Honours Chemistry program. Endowed 1987.

Engineering Institute of Canada Award

Awarded annually, on the recommendation of the Faculty of Engineering, to a Canadian citizen or permanent resident of high proficiency who is proceeding from First to Second year of the Engineering program. Donor: Ottawa Chapter of the Engineering Institute of Canada. Endowed 1989.

Enrichment Mini-Course Scholarship

Value \$500. Awarded annually, to two students who have participated in a Carleton University Enrichment Mini-Course prior to entering the First year of a program at Carleton University. The scholarships shall be given to the two candidates who have the highest scholastic standing of all candidates who are eligible for this award. Established in 1990 to commemorate the 10th Anniversary of the Enrichment Mini-Course Program. Donor: School of Continuing Education.

Ernst & Young Award

Value \$100. Awarded annually to the student with the highest standing in the First year of the Business program. Donor: Ernst & Young, formerly Clarkson, Gordon & Company. Established in 1962. Revised 1989.

Lil Fallis Scholarship

An award (or awards) given on the recommendation of the Director of the School of Business for excellence in the study of accounting and/or finance. Donor: Anonymous. Endowed 1980. Revised 1990.

Bob Farquharson Memorial Award in Journalism

Awarded annually to an outstanding student enrolled in a full-time undergraduate program in the School of Journalism and Communication at Carleton University. Preference will be given to a Third-year student who has indicated an interest in pursuing a career in newspaper and magazine journalism. Donors: Canadian Managing Editors Conference and the Toronto Globe and Mail. Endowed 1980.

The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Entrance Scholarship

Annual entrance scholarship of \$750. Awarded to a student entering the First year of the School of Architecture. The award is based on academic achievement and financial need. Established 1987.

The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Scholarship

Annual award of \$250, in the School of Journalism, to an outstanding student in a course devoted to problems of the mass media. Established 1986.

The Education Foundation of the Federation of Chinese Canadian Professionals of Ontario Scholarship

Annual award of \$250, in the School of Architecture, to an outstanding student in a course devoted to energy and form and related workshop. Established 1986.

Fitzroy Township Historical Society Scholarship

Awarded annually, when merited, on the recommendation of the Chair of the Department of History, to an outstanding student proceeding from Third to Fourth year of the Honours History program. Donor: The Fitzroy Township Historical Society. Endowed 1991.

E. Alison Flood Award in Physical Chemistry

Awarded annually, on the recommendation of the Chair of the Department of Chemistry, to a student who shows promise in the area of physical chemistry. Preference will be given to an outstanding student in the Second year physical chemistry course who is proceeding to the Third year of a Science program. Donors: Friends and former students of the late Dr. E.A. Flood, a principal scientist at the National Research Council, who in 1969 became a senior demonstrator in the Department of Chemistry. Endowed 1980. Revised 1988.

Lilian I. Found Award for Poetry

Offered annually for the best lyric of 50 lines or less submitted by an undergraduate of Carleton University by March 15. Details may be obtained from the Department of English. Donor: The late Mrs. Lilian I. Found. Endowed 1950.

Awards of the Embassy of France

For excellence in the study of French, two book awards are offered annually by the Embassy of France in Canada. Donor: Embassy of France. Established 1978.

Blair Fraser Memorial Award for Journalism Graduates

Offered annually to a Journalism student in his or her graduating year who, in the opinion of a board of selection, shows a marked aptitude for and interest in political reporting at the national and international level. Endowed 1969 in memory of Blair Fraser, Ottawa editor of *Maclean's Magazine*, by a group of his friends.

Jacob Freedman Scholarships

Awarded annually to outstanding students who are proceeding from one year of program to another at Carleton University. Donor: The late Jacob Freedman. Endowed 1967.

Department of French Scholarship

Value \$200. Awarded annually to an outstanding student entering Second or Third year in a Major or Honours program in French. Donors: Members of the Department of French. Established 1984.

Friends of Carleton Scholarships

Scholarships have been provided for general competition among students entering Carleton University at the senior matriculation level. Donor: The Friends of Carleton University. Established 1967.

Fulcrum Technologies Inc. Scholarship

Value \$750. Awarded annually, on the recommendation of the Director of the School of Computer Science, to an outstanding full-time student proceeding from Third to Fourth year of the Computer Science program. Donor: Fulcrum Technologies Inc. Established 1993.

GAC-MAC Undergraduate Scholarship in Earth Sciences

Awarded annually, on the recommendation of the Chair of the Department of Earth Sciences, to a deserving student who is proceeding from one year to another in the Honours Geology program. This scholarship was endowed in 1988 by the Geological Association of Canada and the Mineralogical Association of Canada in recognition of the support provided by undergraduate students when Carleton University hosted the "Ottawa 86" Annual Meeting.

Randall Geehan Memorial Scholarship in Quantitative Economics

Awarded annually, on the recommendation of the Chair of the Department of Economics, to a deserving Fourth-year Honours student or graduate student, whose studies emphasize quantitative work in economics. Endowed in 1990 by colleagues, family and friends in memory of Dr. Randall Geehan, who was a professor in the Department of Economics.

Awards of the Embassy of the Federal Republic of Germany

For excellence in the study of German, book awards are offered annually by the Embassy of the Federal Republic of Germany in Canada. Established 1955.

Glengarry Book Prize

Value \$150 gift certificate redeemable at the Carleton University Bookstore. Awarded annually by the Department of Housing and Food Services to the residence student enrolled in full-time undergraduate studies who has achieved the highest GPA among residence students returning from the previous year, and who is not currently in receipt of another academic award from the University. Donor: Former Students of Glengarry House. Endowed 1983. Revised 1991.

Richard Glover Scholarship

Awarded annually, on the recommendation of the Department of History, to an outstanding student entering the Fourth year of the Honours History program. Endowed 1986.

Golder Associates Award

Value \$500. Awarded annually, when merited, on the recommendation of the Chair of the Department of Civil and Environmental Engineering, to the student

submitting the best Fourth-year civil engineering final project in the area of geo-environmental studies. Donor: Golder Associates Ltd. Established 1991.

Louis and Miriam Goldstein Book Award in Judaic Studies

Awarded annually to a deserving Carleton University student in Judaic studies, on the recommendation of the Department of Religion. Donors: Louis and Miriam Goldstein. Established in 1983 in honour of Carleton University's Fortieth Anniversary.

Mr. and Mrs. Louis L. Goldstein Book Award in Law

Awarded annually to a deserving Carleton University student in a Law program, on the recommendation of the Chair of the department. Donors: Mr. and Mrs. Louis L. Goldstein. Established 1975.

Marisa Ann Golini Memorial Scholarship in Journalism

Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, to one or more deserving students showing exceptional ability in investigative reporting, community service and humanitarian interests who is proceeding from one year to the next in the Bachelor of Journalism program. Endowed in 1995 by Alfio and Esther Golini, parents of Marisa Ann Golini, a 1985 Carleton journalism graduate, and former news director of radio station CKQB-FM The Bear.

Krishnakumar Gopalan Memorial Award

Awarded annually to the Fourth-year student standing highest in the Mechanical Engineering program. Established in memory of Krishnakumar Gopalan, the top graduating student of the class of 1985 in the Mechanical Engineering program, who lost his life tragically within days of graduation. Donor: Friends of the late Krishnakumar Gopalan. Endowed 1985.

Margaret Graham Award

Value \$300. Awarded annually to the undergraduate student with the best overall academic average proceeding from Third to Fourth year of the Bachelor of Journalism program. This award is named in honour of Margaret Graham, who was one of the founding members of the Canadian Women's Press Club in 1904. Donor: The Media Club (Ottawa Branch). Established 1977.

Ian H. Griffith Memorial Scholarships

Awarded annually, if merited, to outstanding students proceeding from one year to another of a degree program in the Faculty of Science, preferably in the Integrated Science Studies program, and having some appreciation of the humanities. Donors: Mr. and Mrs. J. Griffith in memory of their son Ian H. Griffith, B.Sc., Carleton 1976.

Simon Guest Memorial Book Prize

Awarded annually, on the recommendation of the Chair of the Department of Earth Sciences, to a Fourth-year Honours Geology student. Endowed in 1988 by friends, family, the Geology Graduate Society and the Department of Earth Sciences in memory of Simon Guest, a Third-year geochemistry student who died tragically in the summer of 1988.

Peter Gerard Harris Memorial Award

Awarded annually on the recommendation of the School of Journalism and Communication to an outstanding student in the Third year of the Mass Communication program. Endowed 1985 by the family and friends of Peter G. Harris, a Carleton student who was named to the Deans' Honour List in June 1984, and who died tragically two months later.

Trevor A. Harwood Memorial Award

Awarded annually, on the recommendation of the Chair of the Department of Physics, to a promising student in need of assistance who is proceeding from one year to another in the combined Honours Geology and Physics program. Donor Anonymous. Endowed 1987.

Andrew S. Haydon Scholarship

Awarded annually to a student from a high school in the Regional Municipality of Ottawa-Carleton who is entering the Electrical or Systems and Computer Engineering program or the Computer Science program. Endowed in 1992 by business associates and friends of Andrew (Andy) Haydon in acknowledgement of 25 years of service to Ottawa-Carleton, and in recognition of his commitment to the future.

E.P. (Ted) Hincks Memorial Scholarship in Physics

Awarded annually, on the recommendation of the Department of Physics, to a student showing high proficiency in Physics and proceeding from one year to another of a full-time undergraduate program in Physics or in Physics and an allied discipline. Established in 1984 in memory of the late Professor E.P. (Ted) Hincks, D.Sc. (Carleton), F.R.S.C., former Chair of the Department of Physics and a pioneer in the area of high-energy physics.

E.P. Hincks Award of the Institute of Particle Physics

Value \$750. Awarded annually on the recommendation of the Department of Physics to an outstanding student in an Honours, Combined Honours, or Double Honours program in Physics at Carleton University. Donor: The Institute of Particle Physics. Established in 1984 in honour of the Institute's founding President, E.P. (Ted) Hincks, D.Sc., F.R.S.C. The late Professor Hincks played a seminal role in the development of high-energy physics in Canada and was a Chair of the Department of Physics at Carleton University. Revised 1987.

Rosemarie Hoey Award in English

Awarded annually, on the recommendation of the Chair of the Department of English, to a student in the First year of the English Pass or Honors program for outstanding academic achievement in English 18.162. Established 1995.

J.M. Holmes Entrance Scholarship in Chemistry

Awarded annually on the recommendation of the Department of Chemistry to a student entering First-year Honours Chemistry. This award was endowed in 1986 to commemorate Professor Holmes' long association with high school and First-year students.

Professor James M. Holmes Scholarship in Chemistry

Awarded annually to an outstanding student proceeding from the Second to the Third year of an Honours Chemistry program. Donors: Friends and former stu-

dents of Professor James M. Holmes. Endowed 1984.

Janet M. Holmes Memorial Scholarship

Value \$300. Awarded annually, when merited, to a promising student proceeding from the Third to the Fourth year of the Honours Chemistry program at Carleton University. Candidates will be selected by the Department of Chemistry. Donors: Professor and Mrs. J.M. Holmes. Established July 1973.

C.V. Hotson Memorial Scholarship

Awarded annually to an undergraduate student who maintains high academic standing and is active in student affairs. Donated by Carleton alumni and other friends in memory of Mr. Hotson, a 1950 Carleton Journalism graduate and former member of the Students' Council who returned to Carleton in 1953 to become Administrative Assistant to the President, and Executive Secretary of the Alumni Association, a position he held until his death in October, 1960.

Sara Helen Parry Hughes Travel Award

Awarded at the discretion of the Department of Spanish to a good student taking the Department's Winter Programme Abroad, to assist with his or her travel cost. Given in memory of Sara Hughes, a gifted student in Spanish who was tragically killed in an accident at Gravenhurst, August 1984. The gift of her family and friends, 1984.

Award of the High Commission of India

For excellence in the study of Sanskrit, a book award is offered annually by the High Commission of India. Established 1976.

International House Award

Awarded to a student in his or her graduating year attending Carleton University on a student visa who, in addition to maintaining the academic levels of the degree program, has been an active participant in extracurricular activities in the University. Donor: International House. Endowed 1972.

Allama Mohammad Iqbal Award

Awarded annually on the recommendation of the Department of Religion to an undergraduate student who has shown excellence in the field of Islamic studies. Donor: The Government of Pakistan. Endowed 1982.

Award of the Embassy of Italy

For excellence in the study of Italian, a book award is offered annually by the Embassy of Italy in Canada. Established 1971.

Mitch Jacobson Memorial Award in Photojournalism

Awarded annually to the student who, in the opinion of a selection committee appointed by the Director, is the best photojournalist in the School of Journalism and Communication. Donors: Friends of Mitch Jacobson. Established 1986.

Judith Johansen Memorial Award

Awarded annually on the recommendation of the School of Journalism and Communication to the Third-year Journalism student who submits the best series of interpretative reports during the academic year. Endowed in 1982 by friends, fellow students and teachers of Judith Johansen, B.J. 1970 and candidate for the degree of M.J.

George Johnston Poetry Award

Awarded annually, on the recommendation of the Chair of the Department of English, to the full or part-time student who submits the best poetry manuscript that particular year. Established in 1992, by members of the Department of English, in honour of Professor George Johnston, a distinguished poet and founding member of the Department of English.

Journalism Writing Style Book Award

Awarded annually as a book prize to a Journalism 28.220 student, the writing style of whose class assignments shows exceptional merit. Donor: Anonymous. Endowed 1970.

Dr. Harry Katznelson Memorial Scholarship

Value \$100. Awarded annually to an outstanding student proceeding into an advanced year in the Honours Biology program. Donors: Friends of the late Dr. Harry Katznelson, B.S.A., M.Sc., Ph.D., F.R.S.C., Director of the Microbiology Research Institute, Federal Department of Agriculture. Established 1965.

Eldon Kaye Memorial Scholarship

Awarded annually, on the recommendation of the Chair of the Department of French, to an undergraduate or graduate student in the French program who has demonstrated the most promise in French literature. Endowed in 1989 in memory of Eldon Kaye, who was a professor in the Department of French.

Kipling Award

Value \$1000. Awarded annually, on the recommendation of the Dean of Engineering, to a student graduating from the Engineering program who has demonstrated leadership ability and service to the engineering profession and/or the University community. The recipient is to be a Canadian citizen or permanent resident of Canada. Donor: Camp 12 of the Ritual of the Calling of an Engineer. Established 1986.

Marston LaFrance Memorial Award in English

Awarded annually, if merited, on the recommendation of the Department of English to outstanding student(s) entering the Fourth year of the Honours English program at Carleton University. Endowed 1976 in memory of the late Dr. Marston LaFrance, former Dean of the Faculty of Arts, Division I.

Charles Lazarus Scholarship

Awarded annually on the recommendation of the School of Journalism to a First-year Journalism student showing all-round academic excellence. Endowed in 1985 by the family of Charles Lazarus, in his honour.

Harold Lithwick Memorial Scholarship

Value \$300. Awarded annually to a disabled student enrolled in a program at Carleton, who has completed at least three credits towards a degree. Donor: Mrs. Sarah Lithwick Green. Established 1982.

Francis C.C. Lynch Scholarships

Scholarships have been established for open competition among students entering or proceeding from one year to another in Arts, Social Sciences, Science, Business, Journalism, Engineering or Architecture. Donor: The late Francis C.C. Lynch. Endowed 1967.

George A. Lynn Memorial Scholarship

Awarded annually on the recommendation of a jury appointed by the Director of the School of Industrial Design, for excellence in the design of medical equipment. Donors: The friends and family of the late George A. Lynn. Professor Lynn was a well known Canadian industrial designer who, as one of the first Professors of Industrial Design, was a member of the faculty from 1975 until his untimely death in 1983. Endowed 1984.

David Carton MacDonald Memorial Award

Value \$300. Awarded annually, on the recommendation of the Chair of the Department of English Language and Literature, to the student with highest standing in the graduating class in Honours English who has a special interest in modern literature. Established 1987 in memory of David Carton MacDonald.

W.P. MacDonald Memorial Scholarship in Accounting

Awarded annually, on the recommendation of the Director of the School of Business, for proficiency in the study of accounting to an outstanding student who is proceeding from one year to the next in the Bachelor of Commerce program. Endowed in 1995 by the family of W.P. MacDonald.

Macdonald Club Awards in Music

Value \$500 each. Awarded annually to two outstanding students in the Pass or Honours program in Music who have demonstrated a special interest in the creative arts. The recipients will be chosen by the Director of the School for Studies in Art and Culture on the recommendation of faculty members of the Music program. Donor: The Macdonald Club, a private club created to support and encourage the creative arts. Established 1981. Revised 1989, 1992.

Macedonian Association of Ottawa Scholarship in Greek Studies

Value \$300. Awarded annually, when merited, on the recommendation of the Department of Classics to a continuing student of Classical Greek language or civilization who has completed at least one course in the field. Candidates should consult the Department of Classics for precise details of the scholarship's terms. Donor: Macedonian Association of Ottawa. Established 1987.

Gavin Scott Macfarlane Memorial Scholarship

Awarded annually to an outstanding student, preferably in Honours, who is proceeding from one year of program to another at Carleton University. First donated in 1957 by Mrs. G.S. Macfarlane in memory of her husband, Lieutenant-Colonel Gavin Scott Macfarlane.

R.A. MacKay Award in Political Science

Awarded annually by the Department of Political Science to a student in good standing in accordance with terms that the Department may from time to time establish. Donor: The late Dr. R.A. MacKay. Endowed 1977.

Department of Mathematics and Statistics Entrance Award

One or more annual awards for a student or students entering the First year of an Honours or Major pro-

gram in the Department of Mathematics and Statistics at Carleton University. The selection of the recipient or recipients will be based on the results of an annual Competition for High School students, with the decision being recommended by the Chair of the Department in consultation with the Director of Student Awards and the Department's High School Liaison Committee. Donors: Members of the faculty in the Department of Mathematics and Statistics. Established 1973.

Jeannette Matthey Memorial Scholarship

Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, to a student proceeding from Third to Fourth year of the Journalism program who shows promise as a future radio journalist. Donors: Friends and colleagues of Jeannette Matthey, a former Carleton journalism student and an award-winning radio journalist with the CBC. Endowed 1993.

Roderick C. McDonald Memorial Scholarship in Engineering

Value \$300. Awarded annually to an Engineering student of high proficiency entering the Fourth year of program. Established by the University in memory of the late Roderick C. McDonald who, before his death in 1961, was a member of the Faculty of Engineering.

R.L. McDougall Award in English

Awarded annually to an outstanding student in the Pass or Honours program in English. This award was established by friends, family and colleagues of Rob McDougall in recognition of his 25 years of service as a distinguished member of the Department of English and especially for his contribution as teacher, scholar and administrator in the field of Canadian studies. Endowed 1983.

McGregor Easson Scholarship

Awarded annually, to an outstanding student proceeding from one year to another of a full-time undergraduate program in the Arts or Social Sciences. Donor: The late Leah Easson. Endowed 1989.

Margaret McIrvine Scholarship

Awarded annually to outstanding students proceeding from one year of program to another in the School of Business. These scholarships are provided through the bequest of the late Margaret McIrvine, a public servant for many years who was actively involved in women's issues. Endowed 1991.

D.F. McKechnie Award in Accounting

A book prize awarded, when merited, to a student in Business for proficiency in the study of accounting. Donor: D.F. McKechnie, C.A. Endowed 1951.

Violet McLaughlin Scholarship

Awarded annually to students entering or proceeding from one year to another at Carleton University. This fund was given by the late Violet McLaughlin, a resident of Ottawa, in memory of St. Patrick's College. Endowed 1984.

McNaughton Scholarship

The sum equal to tuition fees is awarded annually to a student entering the Fourth year of the Engineering program who has demonstrated a previous commit-

ment to the McNaughton Centre and related IEEE activities. Established in honour of the late General Andrew G.L. McNaughton, scientist, soldier, politician, diplomat, and the inventor of the cathode-ray direction finder. The selection of the recipient will be made by the Faculty of Engineering. Donor: International Electrical, Electronics Conference (IEEC), Inc. Established 1985. Revised 1989.

Luigi Mion Scholarship in Engineering

Awarded annually, when merited, on the recommendation of the Dean of Engineering, to a student proceeding from one year to another of the undergraduate Civil Engineering program who has shown an interest in design or technological research in reinforced concrete. Donor: Luigi Mion, an Ottawa businessman involved in the manufacture of precast concrete products, who was a recipient of a 1992 Canada Award for Business Excellence. Endowed 1994.

Dr. Frederick William Charles Mohr Scholarships

Scholarships have been made available for annual competition among students entering Carleton University or proceeding from one year of program to another and who come from communities within the following Ontario and Quebec counties: Ontario: Renfrew, Russell, Prescott, Glengarry, Stormont, Dundas, Grenville, Carleton, Lanark, Nipissing, Leeds; Quebec: Pontiac, Gatineau, Hull, Papineau, Argenteuil, Temiskaming. These awards are provided through the bequest of the late Dr. F.W.C. Mohr. Donor: The Frederick W.C. Mohr Estate. Endowed 1963.

The Molson Scholarship

Value \$600. Awarded annually to an outstanding full-time student who is proceeding from one year of program to another at Carleton University. Donor: Molson Companies Donations Fund. Established 1990.

Music Award

For the encouragement of a student displaying early excellence in music studies, an award is offered annually to the student registered in a Music program who has achieved the highest standing in the first 2.5 music credits. Donor: Anonymous. Endowed 1983. Revised 1992.

Jayashree A. Nagpur Memorial Award

Value \$100. Awarded annually on the recommendation of the Department of English to an outstanding student in the English program at Carleton University. Donor: Anant L. Nagpur. Established 1976.

National Capital Harvard Business School Alumni Club Book Prize

A contemporary book published by the Harvard Business School and a certificate are awarded annually, on the recommendation of the Dean of the Faculty of Engineering and the Directors of the respective schools, to an outstanding student proceeding from Second to Third year in each of the following areas: the Faculty of Engineering, Schools of Business, Computer Science and Journalism and Communication. Donor: National Capital Harvard Business School Alumni Club. Established 1991.

Betty Nesbitt Memorial Award in Biology

Awarded annually to a student entering the Third year of a Bachelor's Degree program in Biology, who, in the opinion of the Department has shown exceptional promise in the field of biology. Preference will be given to a student in a faculty other than the Faculty of Science. Donors: Friends of the late Mrs. H.H.J. Nesbitt. Endowed 1976.

H.H.J. Nesbitt Scholarship in Biology

Value \$150. Awarded annually to an outstanding student proceeding from the Third to Fourth year of the Honours program in Biology at Carleton University. Established 1951, in memory of Mr. and Mrs. T.E. Clendinnen, by their daughter.

Barrington Nevitt Memorial Award

Awarded annually when merited, on the recommendation of the Director of the School of Industrial Design, for excellence in the Industrial Design Seminar. Established in 1995 by Jacques Giard and Mercedes Ballem in memory of Barrington Nevitt, a well known communications expert and a regular contributor to the Industrial Design Seminar.

Marjorie Nichols Memorial Award

Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, to a graduating student in the Bachelor of Journalism program who shows exceptional promise as a future journalist. Preference will be given to a female candidate. Donors: Friends and colleagues of Marjorie Nichols, a highly respected journalist who was a political reporter for nearly 25 years. Endowed 1992.

James Nolan Memorial Award

Awarded annually to a student in Business, for proficiency in the study of accounting. Donors: The family and friends of the late James P. Nolan, B.Com. Carleton 1977. Endowed 1977.

F.K. North Award in Geology

A book is awarded annually, on the basis of outstanding performance, to a student in final year of the Honours Geology program at Carleton University. This award was provided by friends and colleagues of Ken North, in recognition of his 19 years of service as a renowned teacher of geology at Carleton University, and in particular recognition of his timely and articulate statements that led to careful re-evaluation of Canada's petroleum reserves. Donors: Friends and colleagues of Dr. North. Endowed 1981.

Dr. Iain Ogle Memorial Scholarship

Awarded annually, on the recommendation of the Chair of Earth Sciences, to an outstanding student who is proceeding from one year to another of a Geology program. Endowed 1993 by friends of Dr. Iain Ogle.

Ontario Association of Architects Awards

Value \$2,400. Awarded annually to a deserving student enrolled in the Second year of the School of Architecture program an award of \$1,200; and to a deserving student enrolled in the Third year of the School of Architecture program an award of \$1,200. Donor: Ontario Association of Architects. Established 1972.

Ontario Hydro Engineering Award

Value \$2,400. Awarded annually, when merited, on the recommendation of the Dean of Engineering, to a student proceeding from First to Second year of the Engineering program who is specializing in electrical, mechanical or environmental engineering. Donor: Ontario Hydro. Established 1986. Revised 1987, 1988, 1995.

Ontario Professional Engineers Foundation for Education Entrance Scholarships

Value \$1,200. Two scholarships are awarded annually to students of high proficiency who are entering the Engineering program at Carleton University from high school. Donor: The Ontario Professional Engineers Foundation for Education. Established 1961. Revised 1989, 1991, 1994.

Ontario Professional Engineers Foundation for Education Scholarships

Value \$600 each. Four scholarships are awarded annually to Engineering students of high proficiency proceeding from one year of program to another in Carleton University. Donor: The Ontario Professional Engineers Foundation for Education. Established 1961. Revised 1989, 1991, 1994.

Bettina Oppenheimer Memorial Scholarship in Music

Awarded annually to an academically outstanding student within six credits of completion of the Bachelor of Music degree. The recipient will be chosen by the Director of the School for Studies in Art and Culture on the recommendation of the faculty members of the Music program. Donor: E.M. Oppenheimer. Endowed 1982. Revised 1992.

Ordine Italo-Canadese Scholarship

Value \$500. Awarded annually, on the recommendation of the Department of Italian, to a Canadian citizen or permanent resident who is proceeding from one year to another in a full-time program in Italian (Pass or Honours) and who has shown high proficiency and interest in the study of Italian. Donor: Ordine Italo-Canadese. Established 1988.

Robert E. Osborne Award

Awarded annually, on the recommendation of the Chair of the Department of Religion, to an undergraduate or graduate student in the Religion program. Preference, in order, will be given in the areas of New Testament, Biblical and other forms of religious studies. Endowed 1986 in memory of Robert E. Osborne, who was a professor in the Department of Religion.

The Osgoode Society Legal History Book Prize

Two books awarded annually, on the recommendation of the Chair of the Department of Law, to a student who merits special recognition for work in legal history. Donor: The Osgoode Society. Established 1993.

City of Ottawa Scholarship for Disabled Persons

Value \$1,000. Awarded annually to a disabled student entering or enrolled in a full-time program of studies at Algonquin College of Applied Arts and Technology, Carleton University or the University of Ottawa. The award may be continued for up to four years, provided the candidate maintains satisfactory academic standing. Applicants for the scholarship

must be disabled, according to the United Nations definition. Priority shall be given first to students of academic merit and second, for financial need. Donor: City of Ottawa. Established 1981.

Ottawa Citizen Scholarship

A scholarship valued at \$2,400 awarded annually, if merited, to a student entering Carleton University from a high school in any one of the following counties in the Ottawa district: nine in Ontario (Carleton, Dundas, Glengarry, Grenville, Lanark, Prescott, Renfrew, Russell and Stormont) and four in Quebec (Gatineau, Hull, Papineau and Pontiac). A student admitted with senior matriculation standing will receive \$800 per year for a period of three years, always provided that the student is registered as a regular full-time student at Carleton University and maintains a satisfactory academic standing. Donor: The Ottawa Citizen. Established 1955.

Ottawa Citizen Scholarship in Journalism

Maximum value \$3,600. Awarded annually to a student entering First year of Journalism. The winner will receive \$1,200 a year until graduation provided the student is registered as a full-time student at Carleton University and maintains a satisfactory academic standing in the Journalism program. Donor: The Ottawa Citizen. Established 1969.

Ottawa Film Society Scholarship for Film Studies

Awarded annually to an outstanding student (or students) entering the Fourth year of the Film Studies Honours program. The recipient will be chosen by the Director of the School for Studies in Art and Culture on the recommendation of faculty members of the Film Studies program. Donor: Ottawa Film Society/Ciné-club d'Ottawa. Endowed 1994.

Ottawa Hydro Entrance Scholarships

Value \$1000. Two scholarships are awarded annually, one to a student entering the Electrical Engineering program and one to a student entering the Computer Science program from an Ottawa or Vanier High School. Established in 1990 to commemorate the 75th anniversary of Ottawa Hydro. Donor: Ottawa Hydro.

Ottawa Ladies' College Scholarships

Provided for annual competition among undergraduates for the various disciplines. Endowed 1967.

Ottawa Women's Canadian Club Scholarship

Awarded to an outstanding student who is a Canadian citizen proceeding from one year of program to another of the undergraduate Canadian Studies program. Endowed 1946. Revised 1977, 1983.

Oxford University Press Award in Law

A prize of a copy of the *Oxford Companion to Law* awarded annually, on the recommendation of the Department of Law, to a deserving student pursuing the study of law at Carleton. Donor: Oxford University Press. Established 1984.

The Page and Steele School of Architecture Scholarship

Value \$200. Awarded annually to an outstanding student enrolled in the School of Architecture at Carleton University. Donor: Page and Steele Architects. Established 1967. Revised 1992.

Dr. C. Stewart Parsons Scholarship in Engineering
Awarded annually to an entering or continuing student in the Faculty of Engineering. Endowed 1984 by Mrs. C.S. Parsons in memory of her husband, a former Director of the Bureau of Mines.

Charles and Helen Pattenson Scholarships

Awarded annually to students entering Carleton University who have demonstrated a high potential for university studies. Mr. Pattenson was engaged in engineering research and development in the Radio and Electrical Engineering Laboratories of the National Research Council, Ottawa, Canada, from 1940 to his retirement in 1976. Donors: The late Charles F. and Helen M. Pattenson. Endowed 1980.

Stewart G. Paul Memorial Award

Awarded annually, on the recommendation of the Director of the School of Business, to a deserving student continuing in the Commerce program. Preference will be given to a disabled student. Established in 1992 in memory of Stewart G. Paul by his wife and children. Mr. Paul enjoyed a successful career in business in Ottawa and throughout Canada. Endowed 1992.

Ottawa Section of the Petroleum Society of CIM Annual Award

Value \$500. Awarded annually, when merited, on the recommendation of the Chair of the Department of Earth Sciences, to a Canadian citizen or permanent resident proceeding to the Third or Fourth year of a degree program in Science or Engineering. Preference will be given to a student who has demonstrated an interest in the petroleum industry. Donor: Ottawa Section of the Petroleum Society of CIM (a constituent Society of the Canadian Institute of Mining and Metallurgy). Established 1987.

Peat Marwick Thorne Scholarships

Value \$825. Awarded annually to the Third-year Business student standing highest in the Commerce program. Donor: Peat Marwick Thorne. Established 1969. Revised 1987, 1989, 1990.

The Robert Pickard Scholarship in Environmental Engineering

Awarded annually, when merited, on the recommendation of the Dean of Engineering, to an outstanding full-time student proceeding from Third to Fourth year of the Engineering program who has demonstrated an interest in problems in environmental engineering. Preference will be given to candidates who attended a high school within the Regional Municipality of Ottawa-Carleton, and have shown an interest in municipal engineering. Endowed in 1990 by colleagues, friends and family of Robert Pickard, Eng. Cert. 1953, Commissioner of Environmental Services (retired) for the Regional Municipality of Ottawa-Carleton.

Charles Pinhey Award

Awarded to a student entering the First year of Business at Carleton University from a secondary school in the Regional Municipality of Ottawa-Carleton. The sum of \$300 will be awarded in the student's First year, and \$200 for each succeeding year provided the student is registered as a full-time student at Carleton University and maintains scholarship levels in the Business program. This award is based on high academic performance and on financial need. Donor:

The Ottawa-Carleton Board of Trade. Established 1974.

Prince Memorial Achievement Award

A book award valued at \$100. Awarded annually to an outstanding graduating Honours student in Economics. The student will be selected on the recommendation of the Award Committee of the Department of Economics. Book(s) will be selected by the Department in consultation with the recipient. Endowed 1984 by Professor Kanta Marwah.

Purvins Memorial Award

Value \$100. Awarded annually, when merited, on the recommendation of the Director of the School of Industrial Design to a full-time student proceeding from one year to another in the Industrial Design program. Selection of the recipient will be based on creative applications of materials and technologies in industrial design projects. Donor: The family of the late Laimons Purvins who was a technician in the School of Industrial Design. Established 1990.

James H. Ratray Memorial Scholarship

Value \$500. Awarded annually to a student entering First-year Engineering at Carleton University. Donor: The late James H. Ratray, M.C. Endowed 1961.

Don Reid Memorial Scholarship

Awarded annually, when merited, on the recommendation of the Director of Student Awards after consultation with the Department of Physical Recreation and Athletics, to a full-time student proceeding from one year to another of an undergraduate program. The selection will be made on the basis of outstanding academic achievement and involvement in inter-university sports. Established by funds donated in honour of the late Don Reid, a 1978 Carleton graduate and member of the Ravens basketball team. Endowed 1990.

Peter Reilly Scholarship

Awarded annually to a student entering either the Third or Fourth year of a degree program in the School of Journalism and Communication who shows talent, aptitude and concern for journalistic disciplines. Preference will be given to a student entering Fourth year who has demonstrated a potential for effective use of the medium of television, current affairs and/or documentary programs. Donors: Friends of the late Peter Reilly. Endowed 1978.

Risk and Insurance Management Society Award of Excellence

Four awards are given annually by the Canadian Capital Region of the Risk and Insurance Management Society (RIMS) to students enrolled at Carleton University who have completed at least four credits towards a degree and who have displayed outstanding academic achievement. The award is composed of a credit value of \$500 for the purpose of defraying fees related to courses in the Canadian Risk Management Certificate Program offered through the Canadian Capital Region Chapter of RIMS. Donor: Canadian Capital Region Chapter of RIMS. Established 1994.

Rogers Communications Award in Mass Communication

Awarded annually to an outstanding Fourth-year honours student enrolled in the Mass Communication program. The recipient will be selected by the Awards Committee of the Mass Communication program. Endowed 1991 by Rogers Ottawa Ltd.

Rogers Communications Award in Television Journalism

Awarded annually on the recommendation of the School of Journalism to the student graduating from the Bachelor of Journalism program who shows the most promise as a television journalist. Endowed 1991 by Rogers Ottawa Ltd.

Rolls-Royce Scholarship

Value \$1,500. Awarded annually, on the recommendation of the Faculty of Engineering, to a student proceeding from Third to Fourth year of the Engineering program who has demonstrated an interest in aerospace engineering and displays great promise in this field. Donor: Rolls-Royce Industries Canada Inc. Established 1988.

Herman and Zelda Roodman Award in Journalism

Value \$500. Awarded annually, on the recommendation of the Director of the School of Journalism and Communication, for excellence in reporting, to a graduating student in the Bachelor of Journalism program. Donors: Mr. and Mrs. Herman S. Roodman. Established 1965. Revised 1980, 1988, 1995.

R.L. Rosenberg Memorial Scholarship in Mathematics

A scholarship awarded on the recommendation of the Department of Mathematics and Statistics to an outstanding student entering a First-year Honours program in the Department of Mathematics and Statistics at Carleton University. Endowed in 1986 by the daughters, friends and academic colleagues of the late Reuben L. Rosenberg, who served this University and his Department, with distinction.

Barbie Ross Memorial Award

Value \$500. Awarded annually on the recommendation of the Residence University Management and Policy Board to a full-time student in good academic standing who has demonstrated active participation in the affairs of the Carleton University residence community. Donors: Friends and family of the late Barbie Ross. Endowed 1983.

Annie Fraser Roy Scholarships

Awarded annually to an in-course student or students enrolled in a program, the majority of whose courses are in literature. Donor: The late Marjorie T. Roy. Endowed 1982.

James and Jane Fraser Roy Scholarships

Awarded annually, if merited, to outstanding students proceeding from one year to another in a degree program at Carleton University. Donor: The late Jean Roy. Endowed 1975.

J. Lansing Rudd Scholarship

Awarded annually to a superior student progressing from one year of program to another at Carleton University. Donor: The late J. Lansing Rudd. Endowed 1967.

Department of Russian Undergraduate Award

Awarded annually on the recommendation of the Department of Russian to an outstanding undergraduate student pursuing a Pass or Honours degree in the Department of Russian. Donors: Members and friends of the Department of Russian. Endowed 1983.

Celia Ruygrok Memorial Scholarship

Awarded annually on the recommendation of the Dean of Social Sciences to a deserving student proceeding from Second to Third year of the Criminology and Criminal Justice Concentration. Endowed in 1986 by family and friends of the late Celia Ruygrok, B.A. 1985.

Derek Rymerson Memorial Scholarship

Awarded annually, on the recommendation of the Director of the School of Computer Science, to an outstanding student proceeding from Third to Fourth year of the Computer Science program. Endowed in 1992 by the family and friends of Derek Rymerson.

Jacques and Hélène Sabourin Memorial Scholarship

Awarded annually, on the recommendation of the Director of the School of Architecture, to the student showing the greatest proficiency in a course devoted to lighting for architecture. Donated by the Illuminating Engineering Society and its members in memory of Jacques and Hélène Sabourin who were active in the field of illumination and who tragically lost their lives in an automobile accident in 1984. Endowed 1985.

St. Patrick's College Scholarship

Awarded annually to an entrance or in-course student or students in the humanities and social sciences, with preference being given to students with physical disabilities. Endowed in 1980 to perpetuate the name and traditions of St. Patrick's College.

Samuel Sair Canadian Jewish History Prize

Awarded annually, if merited, on the recommendation of the Department of History to a student submitting the best History term paper, research essay or thesis on any aspect of Jewish history in Canada that uses in part the archival holdings of the Public Archives of Canada. Endowed 1985.

Lawrence Segal Memorial Fund

Established as a book prize for a student enrolled in the School of Business. Donors: The friends of the late Lawrence J. Segal, B.Com. Carleton, 1961. Endowed 1970. Revised 1986.

Richard J. Semple Memorial Award in Mathematics

Awarded annually to an outstanding student enrolled in an Honours Mathematics program and proceeding to Third or Fourth year of studies at Carleton University. Donors: Friends and family of the late Richard J. Semple. Endowed 1977 in memory of Richard J. Semple, a long-time faculty member of the Department of Mathematics.

Eric Sigurdson Award

Awarded annually to an outstanding student in the Computer Systems Engineering program. Donors: Friends and colleagues of the late Professor Eric L. Sigurdson, former member of the Department of Systems and Computer Engineering, in recognition

of his contributions to teaching, research and development, and to the establishment of the Computer Systems Engineering program. Endowed 1982.

E. Norman Smith Memorial Award

Value \$500. Awarded annually to a Third-year Bachelor of Journalism student who, in the opinion of a selection committee appointed by the Director of the School of Journalism and Communication, shows great promise as a newspaper journalist. Established in 1995 in honour of E. Norman Smith, a founder of both the Ottawa Journal and The Canadian Press. Donor: Granddaughter Sheena Pennie, a principal of Delta Media.

Kenneth F. Smith Memorial Award in Journalism

Awarded annually, on the recommendation of the School of Journalism and Communication, to the First-year student standing highest in the Honours Journalism program. Donated by relatives, friends and business associates in honour of the late Kenneth Smith, a Carleton Journalism graduate who became a noted business writer and editor with the Canadian Press. Endowed 1985.

Richard R. Snell Memorial Award in Journalism

Awarded annually, on the recommendation of the School of Journalism and Communication, to an outstanding student in the Journalism program who shows exceptional abilities in investigative reporting. Donated by friends and relatives in honour of Richard R. Snell, a Carleton Journalism graduate and Southam Fellow, who following a notable newspaper career became a leader in the field of public sector communications. Endowed 1988.

Mercy Neal Southam Entrance Scholarships

Entrance scholarships will be awarded annually, if merited, to students entering the First year of Arts, Social Sciences, Journalism, Commerce, Science, Engineering, Architecture, Industrial Design or Public Administration at Carleton University. Endowed in 1949. Under the terms of bequest of the late Wilson Mills Southam, the scholarships are in memory of his grandmother, Mercy Neal Southam (1809-1887), "Sturdy pioneer of the Southam Family in Canada."

Award of the Embassy of Spain

For excellence in the study of Spanish, a book award is offered annually by the Spanish Embassy in Canada. Established 1960.

Bette Spooner Award in Classics

Value \$300. Awarded annually, on the recommendation of the Department of Classics, to a student in the Third or Fourth year of the Pass or Honours program in Classical Civilization. Donor: Family and friends of Bette Spooner. Established 1993.

Randell Stanton Memorial Book Prize

Awarded annually to an outstanding full-time student proceeding from Second to Third year. This prize is awarded in alternate years to a student in the English Language and Literature program and the Architecture program. The book prize is named in honour of an alumnus of Carleton University who studied and loved the disciplines of English literature and architecture. Donor: Family and friends of the late Randell Stanton. Endowed 1990.

Ben and Mary Steinberg Foundation Scholarships

Awarded to outstanding students who may be in need of financial assistance in the furtherance of their studies. Established 1978.

Irene Gertrude Stitt Scholarship Fund

Awarded annually to students of high proficiency proceeding from one year of program to another at Carleton University. The fund has been made possible by a bequest of the late Edith May Stitt, in memory of her sister, Irene G. Stitt. Endowed 1966.

Barbara Sudall Book Prize

Awarded annually on the recommendation of the Department of English to an outstanding part-time student in the Pass or Honours program in English. Endowed 1986 by friends and colleagues of Barbara Sudall in recognition of her twenty-two years of service as the Faculty Administrator in the Faculty of Arts.

Awards of the Ambassador of Switzerland to Canada

For excellence in the study of French, German, and Italian, book awards are offered annually by the Ambassador of Switzerland to Canada. Established 1953.

David A. Thomas Scholarship in Computer Science

Awarded annually, on the recommendation of the School of Computer Science, to an outstanding full-time student, proceeding from one year to another of the Bachelor of Computer Science program. Donors; Friends and colleagues of David A. Thomas, a long-time member of the University community, in recognition of his contribution to the development of academic programs and computing environment at the University and in recognition of his special interest in, and support of, students. Endowed 1991.

Michael Thompson Scholarship in English

Awarded annually, on the recommendation of the Chair of the Department of English, to the full-time Honours English student with the highest GPA who is proceeding from Third to Fourth year of the English program or from Fourth year to Carleton's Master of Arts program in English. Endowed in 1992 by colleagues, friends and former students in honour of Professor Michael Thompson's many contributions to the Department and to the University.

Thomson Award for Reporting

Value \$300. Awarded annually to a student proceeding from Third- to Fourth-year Honours Journalism judged to be outstanding in reporting. Donor: Thomson Newspapers. Established 1970.

Henry Marshall Tory Award

Presented annually to an outstanding graduating student who has shown a high degree of academic application, has indicated an interest in the University by broad participation in extracurricular activities of a constructive nature, has indicated qualities of leadership, and has attended Carleton University for at least three Fall/Winter sessions. Each candidate is nominated by three members of the Students' Association and selection is made by a committee composed of the President of the University, a member of the Faculty chosen by Senate, the Director of Student Awards, and three students chosen by the Students' Council. The winner's name is inscribed on the master trophy and the student receives a miniature rep-

lica. The award was established in 1950 by the Students' Council of Carleton College.

Hubert Travers Scholarship

Awarded annually to outstanding students entering or proceeding from one year to another of a full-time undergraduate program at Carleton University. Preference shall be given to students from the Ottawa area. Endowed 1983.

Underhill Prize

Value \$200. Awarded annually, on the recommendation of the Department of History, to the graduating student with the highest overall GPA in the Honours History program. Endowed 1986.

Vered Foundation Scholarships

Two scholarships valued at \$500 each; one awarded annually, if merited, to an Engineering student in Civil Engineering; the second scholarship awarded annually, if merited, to a student who is proceeding from one year of course to another in a degree program in Political Science. Donor: The Vered Foundation of Ottawa. Established 1975.

Vistas Scholarship

Value \$500. Awarded annually to a student from the City of Ottawa, Alta Vista Municipal Ward, who is entering the First year of the Bachelor of Journalism program. Donor: Alta Vista Community Newspaper. Established 1990.

L.N. Wadlin Scholarship in Mathematics

Awarded annually to a student proceeding from one year to another at Carleton University who has shown excellence in the study of mathematics. Donor: The late Lorenzo N. Wadlin. Endowed 1965.

Wainwright Scholarships

Awarded annually to a student or students studying Canadian history. Donor: Miss Dora I.I.S. Wainwright. Endowed 1974. Revised 1980.

Jessie and Wreford Watson Award in Geography

Awarded annually to the outstanding student entering the final year of Honours Geography at Carleton University. Dr. Wreford Watson, then Chief Geographer of Canada, founded geography at Carleton in 1949. One year later he was joined by Mrs. Watson and together they lectured in geography at Carleton until 1954. Donors: Friends, faculty and alumni of the Department of Geography. Endowed 1980.

R.A. Wendt Book Prize

Awarded on the recommendation of the Department of Psychology, preference will be given to a student in an undergraduate degree program for work done in the history of psychology. This fund was established on the occasion of Professor Wendt's retirement, in recognition of his contributions over many years to the Department of Psychology, the Faculty of Social Sciences, and to the University community. This prize is intended to assist the recipient to build a personal library.

Elizabeth White Memorial Award for Zoological Collection

Value \$50, together with a book prize. Awarded annually, if merited, on the recommendation of the Department of Biology to a student who has submitted, by November 1, an outstanding collection of

insects or arachnids, properly preserved and identified. Donor: Anonymous. Established 1953.

Donald R. Wiles Scholarship in Chemistry

Awarded annually, when merited, on the recommendation of the Department of Chemistry to a student proceeding from First to Second year of an Honours program in Chemistry, Biochemistry or any Combined Honours program with Chemistry. Preference will be given to a student intending to study inorganic or analytical chemistry. Donor: Dr. Donald R. Wiles and friends. Endowed 1990.

Wilgar Memorial Award in English

A book prize awarded to a Carleton University undergraduate who has shown excellence in essay-writing. Established 1951, in memory of the late W.P. Wilgar, Assistant Professor of English at Carleton University, 1948-50. Endowed 1952.

Goldie Wilkinson Scholarship

Awarded annually, on the recommendation of the School of Computer Science, to an outstanding student proceeding from First to Second year of the Bachelor of Computer Science program. Donors: Friends and colleagues of Goldie Wilkinson, a long time member of the University community, in recognition of her special interest in, and support of, students. Endowed 1988.

Kenneth R. Wilson Memorial Award for Journalism Graduates

Offered annually to a student graduating in Journalism who, in the opinion of a board of selection, shows exceptional promise as a future reporter and interpreter of Canadian affairs. Endowed 1953, in memory of Kenneth R. Wilson, Ottawa Editor of *The Financial Post*, by a group of his personal friends.

Morley E. Wilson Scholarship

Awarded annually to an outstanding student in Honours Geology who is proceeding from one year of program to another at Carleton University. Donor: The late M.E. Wilson, Sessional Lecturer in Geology at Carleton University, 1947-1953. Endowed 1975.

Phyllis Wilson Award in Journalism

Awarded annually to the top student in Second-year reporting. The recipient is selected by the faculty members of the School of Journalism and Communication on the basis of recommendations from the Second-year reporting instructors. Donors: Friends and former students of Professor Phyllis Wilson. Endowed 1982.

Herbert I. Wolf Award

Awarded annually to an undergraduate student enrolled in a full-time program at Carleton University. The award is given in memory of Herbert I. Wolf, the son of the donor, who died in active service. Donor: George M. Wolf. Endowed 1981.

Women's Business Network Association of Ottawa Scholarship

Value \$2,000. Awarded annually, on the recommendation of the Director of the School of Business, to an outstanding full-time undergraduate student proceeding to Third or Fourth year of the Commerce program. The recipient is to be a Canadian citizen or permanent resident. Donor: Women's Business Net-

work Association of Ottawa, an association created to promote, improve and profile women in business. Established 1987. Revised 1990.

Gordon J. Wood Scholarships in English

Value \$350 each. One to a full-time student in English proceeding from Second to Third year, who has taken at least three credits in English at Carleton; one to a full-time student in English proceeding from Third to Fourth year, who has taken at least four credits in English at Carleton University. The assessment is made on the basis of overall grades for the year, including Summer courses (if any) from the previous Summer. English marks will be given particular consideration if necessary in the ranking of qualifying students. Donor: Gordon J. Wood, Professor of English, Carleton University. Established 1974.

Susan Joan Wood Memorial Scholarship

Awarded annually on the recommendation of the Department of English. Preference will be given to a student proceeding from the Third to Fourth year of an Honours program in English with an emphasis on Canadian literature. Donor: Friends and colleagues of Susan Joan Wood. Endowed 1982.

Hume Wrong Scholarship

Established by Mrs. Hume Wrong in memory of her late husband. Awarded annually to the leading student in the Third year of History or Political Science proceeding to his or her final Honours year. Donor: The late Mrs. Hume Wrong. Endowed 1962.

YTV Canada Inc. Youth and Television Award

Value \$1000. Awarded annually to a Fourth-year Honours student enrolled in the Mass Communication program whose thesis topic is related to youth and television. The recipient will be determined by a panel selected by the Associate Director (Mass Communication) of the School of Journalism and Communication. Donor: YTV Canada Inc. Established 1992.

Nathan and Sara Zelikovitz Award

Awarded to an outstanding undergraduate student registered in a full-time program at Carleton University. Donor: Nathan Zelikovitz. Endowed 1979.

Bursaries

Evelyn Aldridge Bursary in Economics

Awarded annually to a deserving and needy student or students in any year of Pass or Honours studies in the Department of Economics at Carleton University. Endowed in 1980 in honour of Evelyn Aldridge, Department Secretary and Administrator, in recognition of 20 years of devoted service to the University and to the Department of Economics, its faculty and students. Donors: Members and graduates of the Department of Economics and friends of Mrs. Aldridge.

A. Andras Memorial Bursary

Awarded annually to an undergraduate student attending Carleton University who is in need of financial assistance and whose parent is a member of a trade union that is affiliated to the Canadian Labor Congress. Endowed 1972, in memory of the late Mr. A. Andras who was a member of Carleton's Board of Governors.

Milly Armour Memorial Bursary in Chemistry

Awarded annually to a deserving student proceeding from one year to another in the Major or Honours program in Chemistry who is in need of financial assistance. Endowed in 1993 by family and friends of Milly Armour who was a librarian at Carleton for many years.

Atkinson Charitable Foundation Bursary Fund

Awarded to assist students of Carleton University. Terms of award are as follows: (1) In addition to scholastic merit and financial need, goal and promise will be considered in selecting recipients. (2) Candidates must be residents of Ontario. (3) An applicant must have completed at least one academic year and be enrolled as a full-time undergraduate in any program at Carleton University. (4) For one of the awards, preference will be given to candidates intending later to pursue studies in theology. Donor: The Atkinson Charitable Foundation. Offered for the first time in 1951, as an experiment in the provision of financial aid to students.

F. Luella Barrigar Bursaries

Awarded annually to students entering Carleton University or proceeding from one year of program to another who are in financial need. Some preference shall be given to students with an interest in music. The bursaries are provided through the bequest of the late Miss F. Luella Barrigar, a teacher of music at the Ottawa Teachers' College. Donor: The late F. Luella Barrigar. Endowed 1981.

Nurse "Bill" Bayley Memorial Fund

The fund is to provide for assistance in emergencies for students requiring dental and medical care. Endowed in 1974 by friends and students, this award is named in honour of the late Kathleen Bayley, a member of the Counselling and Health Services from 1965 to the time of her death June 7, 1973.

R.A. Beamish Bursary

Awarded annually to a student entering or progressing from one year to another who, without financial assistance, could not continue his or her formal education. To be eligible, an applicant must be a resident of one of the 11 eastern counties of Ontario (Renfrew, Frontenac, Lanark, Leeds, Carleton, Grenville, Russell, Dundas, Prescott, Glengarry, Stormont). Donor: The R.A. Beamish Foundation. Endowed 1951.

Euphemia Bell Bursary Fund

To provide bursaries to deserving students in financial need. The fund has been made possible by a bequest of the late Euphemia Bell. Endowed 1978.

Beta Sigma Phi Sorority Bursary

Value \$800. Awarded to a deserving full-time student or students in good standing requiring financial assistance to complete his or her studies. Preference will be given to a member of Beta Sigma Phi in good standing or the son or daughter of same. Donor: The City Council of Beta Sigma Phi Sorority. Established 1964. Revised 1981, 1985.

J.P. Bickell Foundation Bursary Fund

The Trustees of the J.P. Bickell Foundation have established bursaries in the Faculty of Science. An applicant must be taking a normal sequence of

courses leading to a degree in Geology and must have competent academic standing. Carleton students may obtain full details of the bursary from the Awards Office. Donor: J.P. Bickell Foundation; Trustees: National Trust. Established 1956.

Birks Family Foundation Bursaries

The Birks Family Foundation has established a plan of annual contributions to the student aid fund of recognized Canadian universities and colleges for the creation of the Birks Family Foundation Bursaries. The bursaries are awarded by the foundation on the recommendation of the University Scholarship Committee and are not restricted to faculty or year and may be renewed. The number and amount of such awards may vary annually, depending upon the funds available for the purpose from the Foundation.

Elissa Gail Bonder Bursary in Journalism

Awarded in alternate years to a deserving student, from a high school in the Regional Municipality of Ottawa-Carleton, who is in the First year of the Journalism program and is in need of financial assistance. Established in 1995 by Linda and Ted in memory of his daughter Elissa Gail Bonder who graduated posthumously from Lisgar Collegiate Institute in 1991.

Gretta Boyd Memorial Bursary

Value \$1,000. First awarded in 1969-70 to an undergraduate student in any year or faculty with good academic standing and in need of financial assistance. Donor: Kiwanis Club of Nepean. Established 1969 in memory of the late Gretta Boyd. Revised 1985, 1994.

Nathan Braham Bursary

Awarded annually to an entering or returning student with superior academic standing who is in need of financial assistance. The bursary has been made possible by a bequest of Mr. Nathan Braham. Endowed 1964.

Donald William Buchanan Bursary

Awarded annually to a student entering or progressing from one year to another and who is in need of and deserving of assistance to continue studies as a full-time student. Donor: The late Donald William Buchanan. Endowed 1967.

C.A.M.P.S. Bursary

The fund is designed to provide assistance to mature or part-time students who are in financial need. Endowed in 1992 by the Carleton Association of Mature and Part-Time Students (C.A.M.P.S.) to commemorate its 10th anniversary.

Canadian Club of Ottawa Bursary

Value \$400. Awarded annually to student(s) in need of financial assistance. The object of the Canadian Club is to foster interest in and knowledge of Canada and Canadian affairs. Donor: Canadian Club of Ottawa. Established 1981. Revised 1985.

Canadian Federation of University Women/Ottawa Bursary

Value \$500. Awarded annually to a deserving student who is a sole-support parent and who is in need of financial assistance. Donor: Canadian Federation of University Women/Ottawa. Established 1993.

Carleton University Academic Staff Association Bursaries

Five bursaries valued at \$300 each. Awarded annually to full-time students proceeding from one year of program to another and requiring financial assistance. Donor: Carleton University Academic Staff Association. Established 1977.

C.U.A.S.A. Business Agent's Bursary

Awarded annually to a full-time student who is proceeding from one year of program to another, and is in need of financial assistance in order to continue his or her studies at Carleton. Endowed in 1988 by Patricia Ann Finn.

Carleton University Faculty Wives Association Bursary

Awarded to students in good academic standing and in financial need. Donor: Carleton University Faculty Wives Association. Established 1977. Endowed 1979. Revised 1988.

Carleton University Refugee Student Bursary

Value \$3,000. Awarded annually on the recommendation of the World University Service of Canada to a refugee student entering or continuing his or her program at Carleton University, who is in need of financial assistance.

Desmond Geoffrey Carty Bursary

Awarded annually to a student in course, specifically in Engineering, who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her son, Desmond Geoffrey Carty. Endowed 1983.

Edward Godfrey Carty Bursary

Awarded annually to a student in course, specifically in Engineering, who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her husband, Edward Godfrey Carty. Endowed 1964.

Maurice Frederick Carty Bursary

Awarded annually to a student in course who would not otherwise be able to proceed without delay to a higher year within the University. Donor: Mrs. E.G. Carty, in memory of her son, Maurice Frederick Carty. Endowed 1957.

The Fred Cinkant Bursaries in Engineering

Awarded annually to Canadian citizen students entering or proceeding from one year of program to another in the Faculty of Engineering, who are in need and deserving of financial assistance to continue their studies at Carleton. Donor: Fred Cinkant, in memory of his mother and father, Mr. and Mrs. Antal Cinkant. Endowed 1984.

The Lorraine Cinkant Bursaries in Science

Awarded annually to Canadian citizen students entering or proceeding from one year of program to another in the Faculty of Science, who are in need and deserving of financial assistance to continue their studies at Carleton. Donor: Lorraine Cinkant, in memory of her mother and father, Mr. and Mrs. Edmond Sabourin. Endowed 1984.

Steve Coughlin Memorial Bursary

Awarded annually to deserving students requiring financial assistance, who are in the Second, Third or

Fourth year of an undergraduate program. Endowed in 1990 by friends and family in memory of Steve Coughlin B.A. 1989.

David Currie Memorial Bursary

Value \$2,500. Awarded annually to a full-time student enrolled in the Second year of a program, who is from the Regional Municipality of Ottawa-Carleton and is in need of financial assistance. The bursary may be held until graduation, at which time a new award will be made. Donor: Royal Canadian Legion, Ottawa Branch 16. Established 1990 in memory of Lieutenant Colonel David Currie, V.C., who was a member of Ottawa Branch 16 and a Canadian who served his country well in war and peace.

Disabled Student Bursary Fund

The fund is to provide for disabled students in need of financial assistance. Donor: Joy MacLaren. Endowed 1988.

Gerhard Dittmann Bursary

Awarded annually to students in financial need who are entering or proceeding from one year to another of an undergraduate program. The bursary has been made possible by a bequest of the late Gerhard Dittmann, a long time employee of Carleton University. Endowed 1990.

Engineers' Wives Association Bursary

Awarded annually to deserving students enrolled in the Faculty of Engineering. Donor: Engineers' Wives Association of Ottawa. Established 1959. Revised 1987.

Lillian Fallis Bursary

Value \$500. Awarded annually to a deserving student(s) proceeding from one year of program to another in the School of Business at Carleton University and who is in need of financial assistance. Donors: The family of the late Duncan H. MacLaren, a graduate of the School of Business. Endowed in 1980 in honour of Mrs. Lil Fallis, a longtime member of staff in the school, in recognition of her special interest in and support of students.

The Muriel Foulger Art History Travel Bursary

Awarded annually, on the recommendation of the Art History program co-ordinator, to deserving students in the Art History program who require financial assistance in order to meet travel or accommodation costs associated with optional study trips undertaken with the approval of the authorities responsible for the Art History program. Donors: Family and friends of the late Muriel Foulger, a long-time staff member and graduate of the University, in honour of her love of art and travel. Endowed 1992.

Friends of Carleton Bursary Fund

A sum to provide bursaries for deserving students in need of financial assistance. This fund has been made possible by contributions from the Friends of Carleton University. Established 1967.

Mary C. Grant Bursary (Laurentian Chapter, I.O.D.E.)

Value \$1,125. Awarded annually to not more than three students who require financial assistance. The bursary was endowed in honour of Mary C. Grant. Donor: The Laurentian Chapter, I.O.D.E. Established 1962. Revised 1980.

Alison Hardy Memorial Bursary

Awarded annually to a deserving student in the Third or Fourth year of the Journalism program who requires financial assistance to complete the program. Established in 1993 by the National Council of Women of Canada in memory of Alison Hardy who was an active member of the Council for many years.

D.R. Harley Consultants Limited Bursary

Awarded annually to a full-time student in the Third year of the Journalism, Mass Communication or Public Administration program. The bursary is awarded to a worthy student who is in need of financial assistance. Established in 1994 to commemorate the 10th anniversary of D.R. Harley Consultants.

International Student Bursary Fund

The fund is to provide for foreign students in good academic standing who are enrolled in a full-time undergraduate program and in need of financial assistance. Donor: Anonymous. Endowed 1989.

Grace and Ken Johnston Bursary

Awarded annually to two full-time students in the Third or Fourth year of the History program who are in need of financial assistance. Donors: The Ottawa City Union of the International Order of the King's Daughters and Sons. Endowed in 1991 in honour of Ken Johnston and his wife the late Grace Johnston.

Hal J. Kavanagh Memorial Bursary

Value \$300. Awarded annually to a deserving student in the Computer Science program who is in need of financial assistance to continue her or his studies. Established in 1991 by Danielle Kavanagh in memory of her son who was a graduate of Carleton University's School of Computer Science. Revised 1994.

John Lyndhurst Kingston Bursary Fund

The fund is to provide assistance to needy students in the study of architecture. This fund has been made possible by a bequest of the late Leslie Chandler Kingston. Endowed 1986

Knights of Pythias, Aurora Lodge No. 53 Bursary

Value \$150. Awarded to a good student progressing from one year of program to another who needs financial assistance to continue his or her studies. Donor: Knights of Pythias, Aurora Lodge No. 53. Established 1960.

Patricia Larmonth Memorial Bursary

Value \$400. Awarded on the basis of reasonable competence, need and personal qualifications to a Canadian citizen who is a full-time student. Donor: Ottawa Women's Canadian Club. Established 1971. Revised 1983.

Jean A. Loates Bursary

Awarded annually to a deserving student entering Carleton University or proceeding from one year of program to another and requiring financial assistance to complete his or her studies. Donated by friends and colleagues of Jean Loates to mark her retirement in 1977. Mrs. Loates is a Carleton graduate and had a 26-year career at the University, first as Student Personnel Officer and from 1966 as Awards Officer. Endowed 1977.

J. Graham MacDonald Memorial Bursary

Awarded annually to one or more deserving students in financial need and proceeding from one year to the next in an undergraduate Geology program. Endowed in 1995 by the family of J. Graham MacDonald.

Joe MacDonald Memorial Bursary

Awarded to a full-time student in an arts or social sciences program who is in need of financial assistance and who was admitted to the University from a secondary school in Sudbury, Ontario. Established by funds donated in memory of Constable Joe MacDonald, a 1988 Carleton graduate and four-year member of the Ravens football team. Endowed 1993.

Paul Menton Memorial Bursary

Awarded annually to a physically disabled student, in good academic standing, who is proceeding from one year to another of an undergraduate program and is in need of financial assistance. Endowed 1990 by family and friends in memory of Paul Menton, Carleton University's first co-ordinator of disabled programs.

Ottawa Citizens' War Services Committee Bursary

An annual sum of approximately \$300 is available to assist veterans, their dependents or descendants, who are students in good standing at Carleton University and are in need of financial assistance. Endowed 1948.

Ottawa Superfluity Shop Bursaries

An annual sum of approximately \$1,500 is available to provide bursaries for veterans of World War I or World War II, or for the descendants of such veterans, who are students in good standing at Carleton University and in need of financial assistance. Endowed 1947.

Agnes J. Godard and Hector A. Perrier Memorial Fund

Bursaries are awarded annually to deserving students in need of financial assistance to continue their studies in the Bachelor of Humanities program. Endowed in 1995 by Bernard L. Perrier in memory of his parents.

Phillips Bursary

The annual yield of a fund of \$5,000 made available to Carleton University by Miss L.A. Phillips. The bursary is to be awarded each year to a student with good academic standing who is in need of financial assistance. Endowed 1962.

Edward T. Pryor Bursary Fund

Awarded annually to one or more deserving students in the Sociology program who are in need of financial assistance. The fund has been made possible by contributions from friends and family in memory of Edward T. Pryor to honour his commitment to social science, scholarship and the youth of Canada. Endowed 1993.

James H. Rattray Bursary Fund

To provide bursaries for students in Science and Engineering, with certain areas of preference. Donor: The late James H. Rattray, M.C. Endowed 1961.

Royal Canadian Legion Branch 16 Bursaries

Value \$500 each. Awarded annually to deserving students from the Regional Municipality of Ottawa-Carleton enrolled at Carleton University, who are in need of financial assistance. Donor: Royal Canadian Legion, Ottawa Branch 16. Established 1983.

J. Lansing Rudd Bursary

Awarded annually to a good student progressing from one year of program to another who needs financial assistance to continue his or her studies. Donor: The late J. Lansing Rudd. Endowed 1967.

Abraham and Mary Shaffer Bursary

Awarded annually to a good student entering Carleton University or proceeding from one year of program to another and requiring financial assistance to complete his or her studies. Donor: The late Abraham Shaffer. Endowed 1967.

Sprott Charitable Foundation Bursary

Awarded annually to deserving undergraduate students in the School of Business who require assistance to complete their program. Donor: Sprott Charitable Foundation. Established 1989. Revised 1993.

Z. Matthew Stankiewicz Bursary

Awarded annually to a deserving student requiring financial assistance, who is entering or is enrolled in the School of Architecture at Carleton University. Donors: Friends, relatives and associates of the late Z. Matthew Stankiewicz. Endowed 1980.

The William John Stauffer Memorial Bursary in Electrical Engineering

Awarded annually to a student who is proceeding from Second to Third year in the Electrical Engineering program and who is in need of financial assistance. Endowed in 1990 by family and friends in memory of William John Stauffer who had an avid interest in electrical engineering.

Ormond M. Stitt Bursary Fund

To provide bursaries for deserving students in need of financial assistance. The fund has been made possible by a bequest of the late Miss Edith May Stitt, in memory of her brother, Ormond M. Stitt. Endowed 1966.

Isabella Ellen Taylor Memorial Bursary Fund

To provide bursaries to undergraduates in any year of program who are in need of financial assistance and have good academic standing. Donor: The late Daisy Elizabeth Taylor. Endowed 1969.

C.R. Thompson Bursary

Value to be announced. Awarded annually to a deserving student proceeding from one year of program to another in the Faculty of Engineering who is in need of financial assistance. Endowed in 1980 in honour of C.R. Thompson, Associate Dean of Engineering in recognition of his contributions to the Faculty of Engineering and its students.

3M Canada Inc. Bursary

Value \$500. Awarded annually to a good student or students in Commerce or Science, who requires financial aid. Donor: 3M Canada Inc. Established 1981.

The Michael Timonin Bursary in Biology

Awarded annually to deserving students, entering or proceeding from one year of course to another in the Major or Honours program in Biology and who are in need of financial assistance to continue studies at Carleton University. Endowed in 1990 by family and friends of Michael Timonin in honour of his 90th birthday.

Hubert Travers Bursary

Awarded annually to students in financial need who are entering or proceeding from one year to another of a full-time undergraduate program at Carleton University. Preference shall be given to students from the Ottawa area. Endowed 1983.

Trivial Pursuit Bursary

Awarded annually to deserving students in the Second, Third or Fourth year of the Journalism program who require assistance to complete their studies. Endowed in 1988 by the shareholders of Horn Abbot Ltd. in recognition of the perseverance, generosity and success of the creators of Trivial Pursuit and the Directors of Horn Abbot Ltd.

University General Bursary Fund

The fund is to provide bursaries in aid of students with satisfactory academic standing who, in the First or subsequent program years, are in need of financial assistance. Established by the University in 1954.

John Gordon Urquhart Memorial Bursary

Awarded annually to a deserving student proceeding from one year to another of the Commerce program who is in need of financial assistance. Endowed 1994 by the family in memory of John Gordon Urquhart, B.A. 1949.

Wainwright Bursary

Awarded annually to a student or students studying Canadian history. Donor: Miss Dora I.I.S. Wainwright. Endowed 1974. Revised 1980.

Ann E. Whitmore Bursary

Value \$500. Awarded annually to a deserving student in the Geology program who requires financial assistance. The bursary has been made possible by a bequest from the estate of Ann E. Whitmore. Endowed 1994.

Honourable Cairine Wilson Bursary

Awarded annually to a good student entering Carleton University or proceeding from one year of program to another and requiring financial assistance to complete his or her studies. The bursary has been made possible by a bequest of The Honourable Cairine Wilson, first woman member of the Canadian Senate. Endowed 1962.

Publication Grant

The John Porter Publication Grant

This grant, established in 1979 by friends and colleagues of the late John Porter, is open to authors of book-length works. The authors must be members of the Carleton University community whose manuscripts have been accepted by a reputable publisher, or persons not affiliated with Carleton University whose manuscripts have been accepted for publication in the Carleton Library series. An annual award of \$1,000, to be applied against the costs of publication of the work, will be determined by a Grants Committee appointed by the Vice President (Academic). Applications or nominations having been received by the committee, the recipient will be selected by the committee on the basis of overall merit and contribution to the literature dealing in aspects of Canadian society. The committee may decline to make an award in a given year for lack of meritorious candidates. The recipient will be expected to deliver a University public lecture dealing in the topic of the book at or near the time of publication.

Loan Funds

John Parker Loan Fund

To provide loans of up to \$1,000 to students in their first year of studies at Carleton and up to \$1,500 in future years to students who require financial assistance to meet their educational costs. This fund also provides emergency loans for 60 days or less to students whose funds from other sources have been delayed. Application forms are available to students in the Awards Office.

Government Aid programs:
(See Student Services p. 22.)

Further information regarding existing sources of scholarships, awards, bursaries and loans may be obtained from the Awards Office, telephone 520-3600.

Chancellor

Arthur Kroeger, O.C., M.A., LL.D.

President and Vice-Chancellor

Robin H. Farquhar, B.A., M.A., Ph.D., F.C.C.E.A.
(until July 31, 1996)

Richard J. Van Loon, B.Sc., M.A., Ph.D.
(as of August 1, 1996)

Board of Governors

(1995-96)

Chair

Ivan Fellegi, O.C., B.Sc., M.Sc., Ph.D., LL.D.

Vice-Chair

Robert Laughton, Q.C., B.A., LL.B

Ex-Officio Members

The Chancellor

The President and Vice-Chancellor

Elected Members

Retire June 30, 1996

G. Stuart Adam, B.J., M.A., Ph.D.
Louise Bergeron-de Villiers, B.A.
Donald Climo, B.Com.
Iris L. Craig, B.A.
Marion Dewar, R.N., B.ScN., Dip. P.H.N.
Ole Ingstrup, B.A., LL.M., Ph.D.
Christopher Loewen, B.A.
Peter Pivko, B.Arch.
Sue Richer, B.A., M.A.
Elaine Silver, B.A.
Lloyd Stanford, M.A.
Richard Stanton, B.A.
James Taggart, B.Eng.

Retire June 30, 1997

J. Laurence Black, B.A., M.A., Ph.D.
Jocelyne Cote-O'Hara, B.A.
Sylvia Gruda, B.A.
William Joe
Gail Larose, B.A., M.A.
Robert Laughton, Q.C., B.A., LL.B.
Allan Lumsden, C.A., B.Com.
Italo Tiezzi, B.A.

Retire June 10, 1998

Ivan Fellegi, O.C., B.Sc., M.Sc., Ph.D., LL.D.
Christina Fiedorowicz, B.A., M.A., Ph.D.
Michel Gaulin, B.A., M.A., Ph.D.
Judith Moses, B.A.
Wesley Nicol, B.A.
Maureen O'Neil, B.A.
Mairuth Sarsfield, CQ, B.A., M.Sc.
Zeev Vered, B.Eng., P.Eng.
Donald Westwood, Dip.Arch.

Secretary

Donald C. McEown, C.D., B.A., Dip.Bus. Admin.

Senate of the University

(1995-96)

Ex-Officio Members

Dean G.S. Adam, B.J., M.A., Ph.D.
Dean J.W. ApSimon, B.Sc., Ph.D.
Dean M.J. Bibby, M.Sc., Ph.D., P.Eng.
Professor L.A. Copley, B.Sc., M.Sc., Ph.D.
Assistant Professor Martien de Leeuw, B.Sc., B.I.D., M.B.A.
President R.H. Farquhar, B.A., M.A., Ph.D., F.C.C.E.A.
Dean D.R. Gardner, B.Sc., Ph.D.
Associate Professor Benjamin Gianni, B.A., M.Arch.
Professor Evangelos Kranakis, B.Sc., Ph.D.
Chancellor Arthur Kroeger, O.C., M.A., LL.D.
Mr. Roman Meyerovich, B.Com., M.A.
Professor J.S. Riordon, B.Eng., M.Eng., D.I.C., Ph.D., F.E.I.C., P. Eng.
Mr. Ehab Shanti
Dean T.P. Wilkinson, B.Sc., Ph.D.

Board Appointees

Miss I.L. Craig, B.A.
Mr. Lloyd Stanford, M.A.
Mr. I. Tiezzi, B.A.

Elected Members

Professor A.O. Abd El Halim, B.Sc. M.A.Sc., Ph.D., P.Eng.
Professor G.E. Bauer, B.A.Sc., M.A.Sc., Ph.D., F.E.I.C., P.Eng.
Associate Professor D.K. Bernhardt, B.A., M.A., C.Psych.
Associate Professor B.P. Burns, B.Sc., M.A., M.Phil.
Mr. Ryan Butt
Associate Professor M.I. Cameron, B.A., Ph.D.
Associate Professor J.F. Campbell, B.Sc., M.A., Ph.D.
Associate Professor, S. Dandamudi, B.E., M.Tech., M.Sc., Ph.D.
Associate Professor T.B. Dawson, LL.B., LL.M.
Professor Fernando de Toro, B.A., M.A., Ph.D.
Mr. Alan De Kok, B.Sc.
Professor Vlastimil Dlab, RNDr., C.Sc., Ph.D., D.Sc., F.R.S.C.
Associate Professor Linda Duxbury, B.Sc., M.A.Sc., Ph.D.
Professor Peter Emberley, B.A., M.A., Ph.D.
Professor C.G. Faulkner, B.A., M.A.
Associate Professor E.P. Fitzgerald, B.A., M.A., Ph.D.
Professor C.W.L. Garner, B.Sc., M.A., Ph.D.
Ms Anna K. Gault
Professor A.M. Gillmor, B.Mus., M.A., Ph.D.
Associate Professor C.C. Gordon, B.A., Ph.D.
Professor D.S. Gorham, B.A., M.A., Ph.D.
Professor J.E. Graham, B.Sc., M.A., M.Sc., Ph.D.
Professor Nan Griffiths, Dipl. in Arch.
Associate Professor C.P. Haines, Dott. In L.e.L.
Mr. Robert Jamieson

Associate Professor Peter Johansen, B.A., M.A.
 Associate Professor F. Kellner, B.A., M.A., Ph.D.
 Associate Professor R.B. Lovejoy, A.B., M.A., Ph.D.
 Associate Professor Colleen Lundy, B.Sc., M.S.W., Ph.D.
 Mr. Ramanan Mylvaganan
 Professor R.F. Neill, B.A., M.A., S.T.B., Ph.D.
 Associate Professor S. Robinson, B.A., M.A.
 Associate Professor P.L. Rosen, B.A., M.A., Ph.D.
 Professor T.K. Rymes, B.A., M.A., Ph.D.
 Professor John Shepherd, B.A., B.Mus., A.R.C.M., D.Phil.
 Associate Professor R.A. Shigeishi, B.Sc., Ph.D.
 Professor D.W. Smith, B.A., M. ès L., Ph.D.
 Professor S.L. Sutherland, B.A., M.A., Ph.D.
 Associate Professor P.D. van der Puije, B.Sc., D.I.C., Ph.D.
 Mr. Shaun Vardon
 Professor P.J.S. Watson, B.Sc., Ph.D.
 Professor J.A. Webb, B.Sc., Ph.D.

Special Appointments

Mr. Martin Foss, B.A., B.L.S.
 Professor Michel Gaulin, B.A., M.A., Ph.D. (Clerk of Senate)
 Mrs. D.P. McKenna, B.A., M.A.

Officers of Administration

(1995-96)

President and Vice-Chancellor

Robin H. Farquhar, B.A., M.A. (British Columbia)
 Ph.D. (Chicago) F.C.C.E.A.
 (until July 31, 1996)

Richard J. Van Loon, B.Sc., M.A. (Carleton) Ph.D. (Queen's)
 (as of August 1, 1996)

Vice-President (Academic) and Registrar

Leslie A. Copley, B.Sc. (Carleton) M.Sc. (McMaster) Ph.D. (Toronto)
 (until April 30, 1996)

Vice-President (Finance and Administration)

J.S. Riordon, B.Eng., M.Eng. (McGill) D.I.C. (Imperial) Ph.D. (London) F.E.I.C., P.Eng.

Associate Vice-President (Finance and Administration)

Duncan R. Watt, B.Eng. (Royal Military College)
 M.B.A. (Ottawa)

Associate Vice-President (Research) and Dean of the Faculty of Graduate Studies and Research

J.W. ApSimon, B.Sc., Ph.D. (Liverpool)

Assistant Vice-President (Information Resources)

J. David Holmes, B.A., M.A. (Cambridge) Ph.D. (Keele) M.L.S. (Western Ontario)

Assistant Vice-President (International) and Director of Carleton International

D.R.F. Taylor, M.A. (Edinburgh) P.G.C.E. (London)
 Ph.D. (Edinburgh)

Assistant Vice-President (Student and Academic Services)

Susan Gottheil, B.A. (McGill) M.A. (Sarah Lawrence)

Dean of the Faculty of Arts

G. Stuart Adam, B.J., M.A. (Carleton) Ph.D. (Queen's)

Dean of the Faculty of Engineering

M.J. Bibby, M.Sc., Ph.D. (Alberta) P.Eng.

Dean of the Faculty of Science

David R. Gardner, B.Sc., Ph.D. (Southampton)

Dean of the Faculty of Social Sciences

Thomas P. Wilkinson, B.Sc. (Durham) Ph.D. (Newcastle-upon-Tyne)

Associate Dean of the Faculty of Arts

L.T. Librande, B.A. (St. Louis) M.A. (Syracuse)
 Ph.D. (McGill)

Associate Dean of the Faculty of Engineering

G.E. Bauer, B.A.Sc. (Toronto) M.A.Sc. (Waterloo)
 Ph.D. (Ottawa) F.E.I.C., P.Eng.

Associate Dean (Programs and Planning) of the Faculty of Graduate Studies and Research

R.C. Blockley, B.A. (Leicester) M.A. (McMaster)
 Ph.D. (Nottingham)

Associate Dean (Research and Development) of the Faculty of Social Sciences

Louise A. Heslop, B.H.Sc., M.Sc. (Guelph) Ph.D. (Western Ontario)

Associate Dean (Undergraduate Academic Affairs) of the Faculty of Social Sciences

Roger B. Wells, B.A. (Reed) M.A., Ph.D. (North Carolina) C. Psych.

Director of the School of Canadian Studies

Pat Armstrong, B.A. (Toronto) M.A., Ph.D. (Carleton)

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J.A. Brook, B.A., M.A. (Alberta) D.Phil. (Oxford)

Director of the Institute of Neuroscience

J.B. Kelly, B.A. (Southwestern at Memphis) Ph.D. (Vanderbilt)

Director of the Institute of Political Economy

M.B. Dolan, A.B. (Harvard) M.A., Ph.D. (The American University)

Acting Director of the Institute of Central/East European and Russian-Area Studies

Carl H. McMillan, Jr., M.A. (Yale) Ph.D. (Johns Hopkins)

Director of the Pauline Jewett Institute of Women's Studies

Deborah S. Gorham, B.A. (McGill) M.A. (Wisconsin) Ph.D. (Ottawa)

Director of the Norman Paterson School of International Affairs

M.A. Molot, B.A., M.A. (McGill) Ph.D. (California at Berkeley)

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Director of the School of Business

Vinod Kumar, B.Sc., (Agra) B.Eng. (Roorkee)
M.Eng. (California at Berkeley) Ph.D. (Manitoba)
P.Eng.

Director of the School of Comparative Literary Studies

R.M. Polzin, B.A. (San Diego) Ph.D. (Harvard)

Director of the School of Computer Science

Evangelos Kranakis, B.Sc. (Athens) Ph.D. (Minnesota)

Director of the School of Industrial Design

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Director of the School of Public Administration

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Allan Moscovitch, B.A. (Carleton) M.A. (Essex)

Director of the School for Studies in Art and Culture

John Shepherd, B.A., B.Mus. (Carleton) A.R.C.M. (Royal College of Music) D.Phil (York, U.K.)

Acting University Librarian

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Director of Admissions and Academic Records

Victor J. Chapman, B.A., M.A. (Carleton)

Director of Budget Planning

William Pickett, B.Sc. (British Columbia) M.Sc., M.A. (Carleton)

Director of Computing and Communications Services

David Sutherland, B.Sc. (Carleton)

Director of Development and Alumni Services

K.I. McCuaig, B.A. (Carleton) B.P.H.E. (Waterloo)

Executive Assistant to the President

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Director of Finance

Michael D. Patrick, B.A. (Bishop's) C.A.

Director of Health Services

David R. Pfeiffer, M.D. (Ottawa) C.C.F.P.

Director of Housing and Food Services

David L. Sterritt, B.A. (Carleton)

Director of Instructional Media Services

Ross Mutton, B.A.A. (Ryerson)

Director of Instructional Television (Itv)

Robin Allardyce, B.A.A. (Ryerson)

Director of Internal Audit and Advisory Services

Keith Gibbs, B.A., M.A. (McGill) C.A.

Director of Pension Fund Management

Elizabeth B. Springer, B.A. (Smith) M.B.A. (Boston) C.A.

Director of Public Relations and Information Services

Patrick O'Brien, B.A., D.P.A. (Carleton)

Director of Personnel

Richard A. Brown, B.A. (Carleton)

Acting Director of the Physical Plant

Duncan R. Watt, B.Eng. (Royal Military College) M.B.A. (Ottawa)

Director of Physical Recreation and Athletics

Keith N. Harris, B.A., B.P.H.E. (Queen's) M.S. (Physical Education) (Springfield)

Acting Director of Planning Analysis and Statistics

Bruce Winer, B.A., M.A. (Carleton)

Director of the School of Continuing Education

Bernadette Landry, B.A. (Ottawa)

Director of the Science Technology Centre

A.A. Raffler, Industrial Master Diploma (Austria)

Director of Student Awards

Carol Fleck

Director of Counselling and Student Life Services

Vincent Giannandrea, B.A., M.A. (Western Ontario)

Director of University Safety

Mark Tinlin

Director of University Services

Katherine Main

Librarians

Mehrun A. Alibhai, B.Sc. (Bombay) Postgraduate Diploma in Librarianship (Aberystwyth)

Heather Britt, B.Mus. (Mount Allison) M.L.S. (Western Ontario)

Laurie G. Campbell, B.A. (Queen's) B.A. (Carleton) M.L.S. (Western Ontario)

Janet D. Carson, B.A. (Bishop's) B.A. (Ottawa)

M.A., M.L.S. (Western Ontario)

Gail Catley, B.Sc., M.L.S. (McGill)

Terry Clark, B.A. (Winnipeg) M.A. (Manitoba)

M.L.S. (Western Ontario)

Bozena Clarke, B.A. (Carleton) B.L.S. (Ottawa)

M.L.S. (Toronto)

Ingrid Draayer, B.A., M.L.S. (Toronto)

P.K.G. Filotas, B.A., B.L.S. (Toronto)

Martin Foss, B.A. (Alberta) B.L.S. (British Columbia)

J. Fraser, B.A. (Queen's) B.L.S. (Toronto)
 Alison Hall, B.A., B.Mus. (Carleton), A.L.A.
 J. David Holmes, B.A., M.A., Ph.D., M.L.S.
 Anita Hui, B.A. (Hong Kong) M.A. (Wisconsin)
 Cert. of Advanced Studies (Chicago)
 Susan L. Jackson, B.A. (Carleton) B.L.S. (McGill)
 Isla Jordan, B.Sc. (Waterloo) M.Sc. (Montréal)
 M.L.I.S. (Western Ontario)
 Callista Kelly, B.A. (Carleton) B.L.S. (Ottawa)
 Elizabeth R. Knight, B.A. (Winnipeg) B.L.S. (British Columbia)
 Frances S. Montgomery, M.A. (Carleton) M.L.S. (Toronto)
 Colleen Neely, B.A. (Carleton) M.L.I.S. (Western Ontario)
 L. Palacek, Prom. Phil. (Charles, Prague)
 Dorothy Rogers, B.A. (Wellesley) B.L.S. (Toronto) M.A. (Yale)
 Linda S. Rossman, B.Math. (Waterloo) M.L.S. (Toronto)
 Janice Scammell, B.A., M.A. (Carleton) M.L.I.S. (Western Ontario)
 Tatiana Schneider, B.S.C. (State University, USSR) M.L.S. (McGill)
 Judy Senecal, B.Sc., M.B.A., M.L.I.S. (McGill)
 Ene M. Tikovt, B.A., M.L.S. (McGill)

Officers of Instruction

(as of July 1, 1996)

Professors, Associate Professors, Assistant Professors, Lecturers, Instructors

Richard D. Abbott, B.A. (Carleton) LL.B. (Queen's) LL.M. (Harvard) of the Bar of Ontario
Professor of Law

A.O. Abd El Halim, B.Sc. (Alexandria) M.A.Sc. (Toronto) Ph.D. (Waterloo) P.Eng.
Professor of Engineering

Nahla Abdo, B.A., M.A. (Haifa) M.A., Ph.D. (Toronto)
Associate Professor of Sociology and Anthropology

Kerry Abel, B.A. (Queen's) M.A. (Manitoba) Ph.D. (Queen's)
Associate Professor of History

Frances D. Abele, B.A. (Calgary, Toronto) M.A., Ph.D. (York)
Associate Professor of Public Administration

A.L. Keith Acheson, B.A., Ph.D. (Toronto)
Professor of Economics

G. Stuart Adam, B.J., M.A. (Carleton) Ph.D. (Queen's)
Professor of Journalism and Communication

Mary Louise Adams, B.A. (Trent) M.A. (Kent) Ph.D. (Toronto)
Assistant Professor of Sociology and Anthropology

F.F. Afagh, B.Sc., M.Sc. (Washington State) Ph.D. (Waterloo) P.Eng
Associate Professor of Engineering

S. James Albert, B.Sc. (Carleton) M.S.W. (Toronto) D.S.W. (Columbia)
Associate Professor of Social Work

Elly Alboim, B.A. (McGill), M.Sc. (Columbia)
Associate Professor of Journalism and Communication

Jon Alexander, M.A. (Southern Illinois) Ph.D. (Kansas)
Associate Professor of Political Science

Leigh Anderson, B.A. (Calgary) M.A., Ph.D. (Washington)
Associate Professor of Public Administration

K.S. Andonian, M.Arch. (Yerevan Polytechnic) M.A.Sc., Ph.D. (Waterloo)
Professor of Architecture

Donald A. Andrews, B.A., M.A. (Carleton) Ph.D. (Queen's) C.Psych.
Professor of Psychology

Hymie Anisman, B.A. (Sir George Williams) M.A. (Memorial) Ph.D. (Waterloo)
Professor of Psychology

William Anselmi, B.A., M.A. (Carleton) Ph.D. (Montréal)
Assistant Professor of Italian

J.W. ApSimon, B.Sc., Ph.D. (Liverpool)
Professor of Chemistry

J.C. Armitage, B.Sc. (London) Ph.D. (Manchester)
Professor of Physics

Hugh Armstrong, B.A., M.A. (Carleton) Ph.D. (Montréal)
Associate Professor of Social Work and the Faculty of Social Sciences

Keir Armstrong, B.Sc. (Toronto) M.A., Ph.D. (British Columbia)
Assistant Professor of Economics

Pat Armstrong, B.A. (Toronto) M.A., Ph.D. (Carleton)
Professor of Canadian Studies

Katherine Arnup, B.A. (Toronto) B.Ed., M.Ed. (O.I.S.E.), Ph.D. (Toronto)
Assistant Professor of Canadian Studies

Salvatore Aronica, Laurea. in L. é L. Straniere (Palermo)
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J.S. Wight, B.Sc. (Calgary) M.Eng., Ph.D. (Carleton) P.Eng.
Professor of Engineering

R.H. Wightman, B.Sc., Ph.D. (New Brunswick)
Associate Professor of Chemistry

Thomas P. Wilkinson, B.Sc. (Durham) Ph.D. (Newcastle-upon-Tyne)
Associate Professor of Geography

Glen Williams, B.A., M.A., Ph.D. (York)
Professor of Political Science

Kenneth Stuart Williams, B.Sc. (Birmingham) M.A., Ph.D. (Toronto) D.Sc. (Birmingham)
Professor of Mathematics

Gale Wills, B.A. (Western Ontario) M.S.W. (Wilfrid Laurier) Ph.D. (Toronto)
Associate Professor of Social Work

S.G. Wilson, B.A., Ph.D. (Durham)
Professor of Religion

V. Seymour Wilson, B.Sc. (British Columbia) D.P.A., M.A. (Carleton) Ph.D. (Queen's)
Professor of Political Science

Stanley Lewis Winer, B.A. (Carleton) M.A., Ph.D. (Johns Hopkins)
Professor of Public Administration

Conrad J. Winn, B.A. (McGill) Ph.D. (Pennsylvania)
Professor of Political Science

Julian Wolfe, B.A. (Carleton)
Associate Professor of Philosophy

Jo-Yung Wong, B.Sc. (Tsing Hua) Ph.D., D.Sc. (Newcastle-upon-Tyne) F.I.Mech.E., F.A.S.M.E., P.Eng., C. Eng.
Professor of Engineering

Jo Wood, B.A. (DePauw) M.A., Ph.D. (Missouri)
Professor of Psychology

Devon H. Woods, B.A. (Carleton) M.Sc. (Edinburgh) Ph.D. (Utrecht)
Associate Professor of Applied Language Studies

Gurli A. Woods, B.A. (Aarhus) Ph.D. (British Columbia)
Assistant Professor of Comparative Literary Studies

C.M. Woodside, B.A.Sc. (Toronto) Ph.D. (Cambridge) P.Eng.
Professor of Engineering

Frances Woolley, B.A. (Simon Fraser) M.A. (Queen's) Ph.D. (London School of Economics)
Assistant Professor of Economics

Michael J. Worswick, B.A.Sc., M.A.Sc., Ph.D. (Waterloo)
Associate Professor of Engineering

B.J. Wozniak, M.F.A. (Warsaw)
Professor of Industrial Design

J. Barry Wright, B.A. (Toronto) LL.B. (York) LL.M. (London School of Economics) D.Jur. (York)
Associate Professor of Law

James S. Wright, B.S. (Stanford) Ph.D. (California at Berkeley)
Professor of Chemistry

S.H. Wu, M.D. (Shanghai Medical)
Associate Professor of Psychology

R.C. Wyndham, B.Sc. (McMaster) M.Sc. (Guelph) Ph.D. (Calgary)
Professor of Biology

H. Yamazaki, M.S. (Hokkaido) Ph.D. (Wisconsin)
Professor of Biology and Biochemistry

Metin I. Yaras, B.Sc. (Technical University of Istanbul) M.Eng., Ph.D. (Carleton)
Assistant Professor of Engineering

Lynne Young, B.A. (Carleton) Ph.D. (Louvain)
Associate Professor of Applied Language Studies and Linguistics and Applied Language Studies

Robert M. Zacharko, B.Sc. (Montréal) M.Sc., Ph.D. (Saskatchewan)
Professor of Psychology

Graham Zelmer, B.Sc. (Manitoba) Ph.D. (British Columbia)
Associate Professor of Mathematics

Qi-jun Zhang, B.Eng. (East China Institute) Ph.D. (McMaster)
Associate Professor of Engineering

Eugenia N. Zimmerman, B.A. (Barnard) M.A., Ph.D. (Wisconsin)
Associate Professor of French

Helmut Zobl, B.A., M.A. (Toronto) Ph.D. (Essen)
Professor of Linguistics and Applied Language Studies

Professors Emeriti

John Adjeleian, B.Eng. (McGill) S.M. (Massachusetts Institute of Technology) P.Eng.
Engineering

D. Anglin, B.A. (Toronto) M.A., D. Phil. (Oxford)
Political Science

Alexander Munro Beattie, B.A. (Toronto) A.M., Ph.D. (Columbia) D. Litt. (Carleton)
English

Albert Roy Boothroyd, B.Sc., Ph.D. (London)
Engineering

David M.L. Farr, B.A. (British Columbia) M.A. (Toronto) D.Phil. (Oxford)
History

W. Gilles
Industrial Design

H.F. Howden, B.S., M.S. (Maryland) Ph.D. (North Carolina)
Biology

Venkatram N. Iyer, M.Sc., Ph.D. (Bombay)
Biology

George B. Johnston, B.A., M.A. (Toronto) LL.D. (Queen's) D.Litt. (Carleton)
English

Wilfred H. Kesterton, B.A. (Queen's) B.J., D.Litt. (Carleton)
Journalism

Moray St. John Macphail, B.A. (Queen's) M.A. (McGill) D.Phil. (Oxford) D.Sc. (Carleton) F.R.S.C.
Mathematics

H.B. Mayo, B.A. (Dalhousie) M.A., D.Phil. (Oxford) LL.D. (Carleton) F.R.S.C.
Political Science

R.L. McDougall, B.A. (British Columbia) M.A., Ph.D. (Toronto) D. Litt. (Carleton)
English

B. McFarlane, M.A. (McGill) Ph.D. (London)
Sociology and Anthropology

S.R. Mealing, B.A. (Alberta) B.Litt., M.A. (Oxford)
History

H. Blair Neatby, B.A. (Saskatchewan) M.A. (Oxford) Ph.D. (Toronto) F.R.S.C.
History

Herbert H.J. Nesbitt, B.A. (Queen's) M.A., Ph.D. (Toronto) D.Sc. (Leiden, Carleton) F.L.S., F.R.E.S., F.Z.S.
Biology

F.K. North, M.A., D.Phil. (Oxford)
Geology

Ernst M. Oppenheimer, B.A. (Toronto) M.A. (Columbia) Ph.D. (Harvard)
German

Teresa Rakowska-Harmstone, B.A. (McGill) A.M. (Radcliffe) Ph.D. (Harvard)
Political Science

J.T. Rogers, B. Eng., M.Eng., Ph.D. (McGill) F.C.S.M.E., P. Eng.
Engineering

D. Rowat, B.A. (Toronto) M.A., Ph.D. (Columbia)
Political Science

H. Schirmer, M.A., Ph.D. (Frankfurt)
Mathematics

George Swinton, B.A. (McGill)
Art History

M.J. Sydenham, B.A., Ph.D. (London) F.R.Hist.S.
History

F.G. Vallee, B.A. (McGill) Ph.D. (London) F.R.S.C.
Sociology and Anthropology

James C.S. Wernham, M.A. (Aberdeen, Cambridge) S.T.M. (Union)
Philosophy

E. West, M.Sc., Ph.D. (London)
Economics

The Institution

1942

Ottawa Association for the Advancement of Learning established to develop Carleton College. At first the College offered only evening classes in introductory university subjects, with some courses in public administration.

1943

Ottawa Association for the Advancement of Learning incorporated.

1945

Beginning of day classes and full-time teaching. Establishment of the Faculty of Arts and Science, including courses in journalism, and first-year engineering.

1946

Move from rented premises to the First Avenue campus, formerly Ottawa Ladies' College. First degrees awarded, three in journalism and three in public administration.

1947

The College committed itself to complete Major and Honours courses, the third year of the program being offered for the first time in 1947-48, the fourth year in 1948-49, and the fifth (Honours) year in 1949-50.

1949

First degrees in arts, science and commerce awarded. Formation of Senate.

1950

First Honours degrees in arts and science awarded.

1952

The Carleton College Act 1952 passed by the Ontario Legislature. This changed the corporate name to Carleton College. It also confirmed the power to grant degrees.

1952-53

Property for new campus acquired, on the site between the Rideau River and the Rideau Canal.

1953

Establishment of the School of Public Administration.

1954

Appointment of Architectural Associates for Carleton to prepare first master plan and to design first group of buildings. First honorary degree (LL.D.) conferred on Dag Hammarskjöld, Secretary-General of the United Nations.

1955

First Master's degree awarded.

1957

The Carleton University Act, 1957. Establishment of the School of Engineering. Establishment of the Institute of Canadian Studies.

1959

Move to Rideau River campus, following construction of the Henry Marshall Tory Building (science), the Maxwell MacOdrum Library, and Norman Paterson Hall (arts).

1961

First degrees in engineering awarded. First Ph.D. degree awarded.

1962

Students accommodated in residences on campus for the first time.

1963

Reorganization into Faculties of Arts, Engineering, Science, and Graduate Studies. Committee on Soviet and East European Studies established.

1966

Establishment of the School of International Affairs. Establishment of the School of Commerce. Comparative Literature Committee established.

1967

Integration of St. Patrick's College as a division of the Faculty of Arts. School of Social Work became part of the Faculty of Arts.

1968

Establishment of the School of Architecture. New University Government established with student representatives at all levels of the University system from department to Board of Governors. First academic exchange agreement between Carleton and the State University of Leningrad.

1969

Free-choice first year initiated for the Faculty of Arts. Linguistics Committee established.

1970

Agreement completed between Carleton and the University of Ottawa to accept "visiting students" at the graduate level. Biochemistry degree program initiated. The Institute of Soviet and East European Studies established.

1971

Unified Liberal Arts Program established for St. Patrick's College. General Science Degree program established with Environmental Studies program available.

1972

School of Social Work accommodated on the Rideau River campus. A one-year French program offered at St. Patrick's College for students wishing to improve their knowledge of the French language and culture by one year's intensive study. Exchange program with the Université de Savoie, Chambéry, France.

1973

First degrees in architecture awarded. St. Patrick's College moved to a new facility on the Rideau River campus. Establishment of the School of Industrial Design. New athletics complex, with a 50-metre pool and a fitness centre opened.

1974

Faculty of Graduate Studies renamed Faculty of Graduate Studies and Research. School of International Affairs renamed the Norman Paterson School of International Affairs. First courses offered off campus in Lanark County and downtown Ottawa. St. Patrick's College division held first Convocation ceremony at new location on Rideau River campus. Master of Journalism program and Master of Arts program in anthropology approved. Master of Arts program in religion approved. Academic exchange agreement between Carleton and the International Cultural Institute, Budapest, Hungary.

1975

Lester B. Pearson Chair for International Affairs approved. Establishment of Gerhard Herzberg Lecture Series in Science. Scholarships established for part-time students. CKCU-Radio Carleton has FM licence approved. New undergraduate programs introduced in Canadian studies and computing science. A program in film studies approved. First Dunton Alumni Award presented.

1976

Creation of the Paterson Centre for International Programs to co-ordinate the growing number of academic exchanges between Carleton and universities throughout the world. Division of the Faculty of Arts into two separate faculties; the Faculty of Arts and the Faculty of Social Sciences. First Master of Journalism degrees awarded.

1977

Criminology and Corrections concentration (later renamed Criminology and Criminal Justice) begun at St. Patrick's College, April.

1978

School of Continuing Education established. Credit courses offered on cable television, September. Institute of Biochemistry established.

1979

St. Patrick's College ceased to operate as an academic unit of the University. Academic programs of the College continue as University programs, except for the Unified Liberal Arts Program. Department of Film Studies established. First Marston LaFrance Memorial Lecture presented. Ph.D. program in English and French-Canadian literature begun.

1980

School of Computer Science established.

1981

Establishment of the Ottawa-Carleton Institute for Research and Graduate Studies in Chemistry, a joint program with the University of Ottawa. Establishment of a joint Ph.D. program in economics with the University of Ottawa. Establishment of the B.Eng. Computer Systems Engineering Program.

1982

Establishment of the Ottawa-Carleton Centre for Geoscience Studies, representing the combined research strengths of Carleton University and the University of Ottawa with programs leading to M.Sc. and Ph.D. degrees in most areas of geology. Establishment of a joint master's program in computer science with the University of Ottawa. University celebrates 40th anniversary.

1983

Establishment of four joint graduate programs with the University of Ottawa: the Ottawa-Carleton Centre for Graduate Studies and Research in Biology; the Ottawa-Carleton Centre for Graduate Studies and Research in Physics; the Ottawa-Carleton Institute for Research and Graduate Studies in Electrical Engineering; and the Ottawa-Carleton Graduate Specialization in Neuroscience.

1984

Two new undergraduate programs introduced: the Combined Honours B.Sc. in Biology and Biotechnol-

ogy, and in Biochemistry and Biotechnology. Joint graduate programs with the University of Ottawa established in the areas of civil engineering, mechanical and aeronautical engineering, and mathematics and statistics.

1985

Master of Management Studies program established in the School of Business. The School of Public Administration offers a concentration in development administration in conjunction with the Norman Paterson School of International Affairs. An additional floor on one wing of the Herzberg Laboratories for Physics is constructed to house the School of Computer Science.

1986

The Social Sciences Research Building is built to accommodate the rapidly-expanding research activity in the Faculty of Social Sciences. An annex on the top floor of the Architecture Building is constructed to provide additional space for the Faculty of Engineering. The Paterson Centre for International Programs is renamed Carleton International with a broader mandate to administer Carleton's international activities in teaching and research.

1987

The Institute of Women's Studies is established. The Arts Tower is renamed Davidson Dunton Tower/Edifice Davidson Dunton in honour of Arnold Davidson Dunton, former Carleton University President and Director of the Institute of Canadian Studies. Major revisions to the Undergraduate Exchange Agreement with the University of Ottawa extend opportunities for students to study at both universities. The University launches the Carleton University Challenge Fund, the largest fund-raising campaign in its history.

1988

Canada's first Bachelor of Engineering program in aerospace engineering is established. Bell-Northern Research Limited and the Natural Sciences and Engineering Research Council provide funding for an Industrial Research Chair in computer-aided engineering within the Department of Electronics. The Departments of Electronics and Systems and Computer Engineering are major partners in the Telecommunications Research Institute of Ontario (TRIO), one of seven "centres of excellence" chosen by the provincial government for scientific research. The Faculty of Science introduces co-operative education programs in computer science and biochemistry/biotechnology.

1989

New regulations for the Faculties of Arts and Social Sciences encourage stricter controls on academic progress. Department of Mechanical and Aeronautical Engineering renamed Department of Mechanical and Aerospace Engineering. The Institute of Political Economy is established. The Canadian Centre for Trade Policy and Law, a joint initiative of the Norman Paterson School of International Affairs and the University of Ottawa, is established. Carleton University and Apple Canada Inc. form a partnership in the Apple Research Partnership Program. The Challenge Fund surpasses 80 percent of its goal by mid-year and capital projects are initiated: the new

Life Sciences Building; a residence building; additions to the MacOdrum Library and Southam Hall; and the Minto Centre for Advanced Studies in Engineering.

1990

A new Ph.D. program in computer science, offered jointly with the University of Ottawa, is established. The University introduces a Bachelor of Social Work degree program. The Paul Menton Centre for Persons with Disabilities is opened. The Centre for Research in Particle Physics is established to carry on the work of the National Research Council's large-scale physics projects.

1991

The University's \$30 million Challenge Fund campaign surpasses its goal and a \$1.5 million "enhancement" campaign is launched. The extension to the MacOdrum Library is complete and construction of the Minto Centre for Advanced Studies in Engineering begins. Introduction of new M.A. programs in political economy, communication, legal studies, and applied language studies. The Faculty of Arts establishes School for Studies in Art and Culture and School of Comparative Literary Studies. The Centre for Analytical and Environmental Chemistry is formed and the Chair for Management in Technological Change is announced. International exchange agreements are formalized between Carleton, and Laval, York, British Columbia and four Swedish universities.

1992

The University celebrates its 50th anniversary. Institute for Interdisciplinary Studies, which includes a new B.A. program in environmental studies, is established. Department of Civil Engineering renamed Department of Civil and Environmental Engineering. School of Journalism becomes School of Journalism and Communication, and Institute of Canadian Studies becomes School of Canadian Studies. The Centre for Aboriginal Education, Research and Culture is established. A new Ph.D. program in public policy, the first of its kind in Canada, is offered by the School of Public Administration, and a master's program in Canadian art history is introduced. The Carleton University Art Gallery and the Minto Centre for Advanced Studies in Engineering are opened. The Governor General of Canada and Head of the Canadian Heraldic Authority, His Excellency the Right Honourable Ramon John Hnatyshyn, grants the arms and flag of Carleton University at the fall Convocation ceremonies.

1993

Centre for Memory Assessment and Research established. Teaching and Learning Resource Centre established. Institute of Soviet and East European Studies renamed Institute for Central/East European and Russian Area Studies. Carleton University hosts the 1993 Learned Societies Conference. Construction begins on new Inco Centre. Institute of Women's Studies renamed Pauline Jewett Institute of Women's Studies. Administration Building renamed Robertson Hall.

1994

New Industrial Research Chair in Performance Engineering of Real-time Software established. The Inco Centre officially opened. Research Facility for Elec-

tron Microscopy opened. New Ph.D. program in Public Policy established. New Bachelor of International Business program approved. Colonel By Child Care Centre opened. Construction begins on the new Carleton Technology and Training Centre.

1995

Carleton Technology and Training Centre opened. Bachelor of Humanities undergraduate degree program established. College of the Humanities approved.

Enrolment

In the fall of 1995, there were 14,936 full-time students registered at the University; students taking courses on a part-time basis numbered 5,232.

Chancellors

1952-54

Harry Stevenson Southam

1954-68

Chalmers Jack Mackenzie

1969-72

Lester Bowles Pearson

1973-80

Gerhard Herzberg

1980-90

Gordon Robertson (Emeritus 1992-)

1990-92

Pauline Jewett

1993-

Arthur Kroeger

Presidents

1942-47

Henry Marshall Tory

1947-55

Murdoch Maxwell MacOdrum

1955-56

James Alexander Gibson (*Acting*)

1956-58

Claude Thomas Bissell

1958-72

Arnold Davidson Dunton

1972-78

Michael Kelway Oliver

1979

James Downey (*pro tempore*)
January 1 — May 15

1979-1989

William Edwin Beckel

1989-1996

Robin Hugh Farquhar

1996 -

Richard Van Loon

The University sponsors a number of lectures each year. These lectures are open to the public.

Major Lecture Series

A distinguished series of lectures supported by Carleton University faculties.

The Florence Bird Lecture

Established in 1987 to explore the experiences of women in Canada and abroad. It is named in honour of The Honourable Florence Bird, in recognition of her work for the Canadian Broadcasting Corporation, the Canadian International Development Agency, the Royal Commission on the Status of Women in Canada, and the Senate. Sponsored jointly by the Faculties of Arts and Social Sciences.

The Davidson Dunton Research Lecture

Established in 1983, the Davidson Dunton Research Lecture is presented by a Carleton University scholar who is active in research and has achieved international recognition. The lecture honours former Carleton University President Arnold Davidson Dunton and is sponsored by the Faculty of Graduate Studies and Research.

The Gerhard Herzberg Lecture

Established in 1975 by the Faculty of Science, this lecture honours Gerhard Herzberg, a former Chancellor of Carleton University and recipient of the 1971 Nobel Prize for Chemistry. The lecture emphasizes the relationship between science and society and addresses an aspect of science that has a pronounced impact on our daily lives.

The Marston LaFrance Research Fellowship Lecture

Established in 1979 by the Faculty of Arts in memory of Marston LaFrance, former Professor of English and Dean of Arts at Carleton University. Each year, the recipient presents a seminar or public lecture on some aspect of the research conducted while on the LaFrance fellowship.

The John Porter Memorial Lecture

Established in 1982 in memory of John Porter, former Vice-President (Academic) at Carleton University and a distinguished sociologist. Sponsored by the Faculty of Social Sciences.

Special Lectures

Individual lectures sponsored by various academic departments, institutes or endowments.

The Munro Beattie Lecture

Established in 1985 in honour of Alexander Munro Beattie, the founder and first Chair of the Department of English, in recognition of his outstanding contribution to Carleton University in teaching, scholarship and administration. Sponsored by the Department of English Language and Literature.

The Dick and Ruth Bell Lecture

Established in 1988 in honour of Ruth Bell and the late Dick Bell. The lecture is delivered annually by

distinguished scholars in the field of political science or by distinguished persons serving or having served in the public life of Canada or one of its provinces. Supported through the Dick and Ruth Bell Fund.

The Edgar and Dorothy Davidson Lecture

The Edgar and Dorothy Davidson Lecture was established in 1983 and is sponsored by the Department of Religion. The lecture brings a prominent scholar in religious studies and related areas to speak at Carleton.

The McMartin Memorial Lecture

The McMartin Memorial Lecture is presented in alternate years by the Department of Religion at Carleton University and the Faculty of Graduate Studies at the University of Ottawa. The series was established in 1969 and is funded by Mrs. J.P. Gilhooly of Ottawa in memory of her parents, Mr. and Mrs. John McMartin. Lecture themes promote the importance of ethical, moral and religious standards to education and living.

The Adam Mickiewicz Memorial Lecture

Established in 1969, the Adam Mickiewicz Memorial Lecture is presented each year by noted authorities in the area of Soviet and East European Studies. The series is sponsored by Carleton University's Institute of Central/East European and Russian-Area Studies and the Adam Mickiewicz Foundation of Canada to commemorate Poland's foremost poet, Adam Mickiewicz.

The H.H.J. Nesbitt Lecture

Established in 1987 by the Faculty of Science in honour of H.H.J. Nesbitt, Carleton University's first Dean of Science. The lectures are presented by Carleton alumni who have earned international recognition as scientists. The topics are of general interest to the public as well as to the scientific community.

The Technology, Society and Environment Studies Committee Lecture

Established in 1981 to sensitize the public to the impact of technology on society and the environment. The lecture is sponsored by the Technology, Society and Environment Studies Committee.

The Philip E. Uren Memorial Lecture

Established in 1982 in memory of Philip Uren, former Director of the Institute of Soviet and East European Studies (now Institute of Central/East European and Russian-Area Studies), the Norman Paterson School of International Affairs, and the Paterson Centre for International Programs (now Carleton International) at Carleton University. Sponsored by the Faculty of Social Sciences.

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